VOL. 160 — NO. 22

JUNE 3, 1961

Telephony

THE JOURNAL OF THE TELEPHONE INDUSTRY

Machine attendant looks at customer bills printed two at a time. California Independent company has designed special bill forms to be used with high-speed electronic computer equipment. Doubles output in producing customer statements. Story, page 19.

Circulation This Issue
14,355 of Which
13,749 Is Paid

MANAGEMENT · PLANT · TRAFFIC · COMMERCIAL · LEGAL · ACCOUNTING

"TOUCH-
LINES 10 11 12 13 14 15 16 17
TRUNKS 1 2 3 4 5 6 7 8
AUX
INFO 1
INFO 2
OPR TRK
TRK HOLD
TRK RLS
BLOCK RLS
CODE CALL
PAGE

STROMBERG-CARLSON®

F-50 PBX

LITE"

The design of the exclusive Stromberg-Carlson® F-50 PBX "Touch-Lite" Turret was dictated by telephone PBX operators. This turret makes their jobs easier, simpler, faster. Calls are completed, transferred or supervised by a *single touch of a key* . . . keys illuminate!

Two-tone turret in beige, green or grey comes to you fully equipped; capacity of 50 lines and 10 trunks . . . completely wired with cable attached.

Compact, office-type equipment cabinet (not shown) is sound-proofed, contains all switching equipment and power supply.

The system is designed to permit a maximum of individual station control to speed service and relieve the attendant. Features such as:

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- Camp on Busy
- Night Transfer
- Controlled Executive Right-of-Way
- Station Answer of Trunk Calls
- Restricted Service
- and many more.

For details, prices and delivery information, call your Stromberg-Carlson representative: In Atlanta, call 875-7467; Chicago: STate 2-4235; San Francisco: OXford 7-3630; Kansas City: HArrison 1-6618; Rochester: HUbbard 2-2200.

GENERAL DYNAMICS | ELECTRONICS

FLASHES AND PLUGS

HOLD THAT LINE! "Always let the caller know what is going on," the British Post Office advises telephone operators in a booklet on the "Telephone in Business," and adds that the caller will "in this way know he has not been forgotten."

A writer in a recent issue of *Punch* opines that it *is* difficult for an immature telephonist to know how far to go with relaying the office gossip to a waiting caller. However, he offered this inspiring tidbit as especially stimulating to the waiting caller—"Sales have gone up just in the 25 minutes you've been holding on."

This, he said, would be infinitely safer than saying "The chairman will take you right now when he's through with his Alka-Seltzer."

Punch agrees, though, that such choice business news as mergers "can leak as quickly as pipes after frost, and any such indiscretions as 'I'm putting you through the moment Charlie Clore's off the line' must be severely checked."

•

POLES IN FLIGHT. *Aerospace*, publication of Aerospace Industries Association of America, reports that telephone poles and bicycle spokes are helping one missile manufacturer stretch defense dollars.

This manufacturer is building a supersonic target missile system for the Army.

In launching tests of the booster rocket which starts the missile on its way, the company is economizing by using telephone poles instead of real missiles.

The poles are trimmed to the shape and size of the missile. Fins and a mockup engine are attached. When painted and weighted with ballasts, the dummy missile closely simulates the real thing in appearance, size, weight and inertia.

The actual missile contains electronic equipment for control by a ground command post. Electronic equipment for the missile requires small antennas to transmit and receive signals.

The manufacturer decided to make these antennas of bicycle spokes. Spokes are cut off at one end and re-threaded at the other to screw into a tiny base attached to the missile's body.

•

HECKLING A HECKLER. A pretty young lady was conducting a group of visitors through one of the larger buildings of Bell Telephone Co. of Canada one day, the *News* of that company reports, when she paused before some intricate and very complex computers, sorters and other electronic equipment, which make direct dialing a reality.

She expatiated upon the wonders of DDD, and was starting to move on to another section, when a mischievous chap asked:

"Miss, just how *does* this system work?"

"Just fine, sir, just fine!" she said. "Now, if you will follow me . . ."

CHANGE OF ADDRESS

Please notify your local postmaster and the Circulation Department of TELEPHONY of change of address. Change cannot be made without the old as well as the new address. Allow three weeks for change of address to become effective.

Telephony

THE JOURNAL OF THE TELEPHONE INDUSTRY

1901 — 60 years — 1961

June 3, 1961

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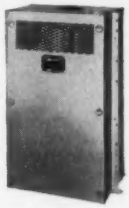
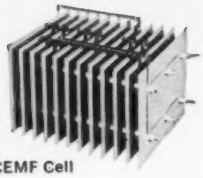
We create...

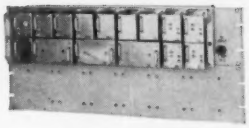


Decimonic Converter

Dual Flotrol



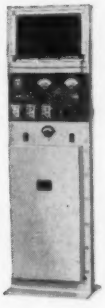
Dry CEMF Cell



Static Interrupter

Bat Tap d-c Voltage Reducer

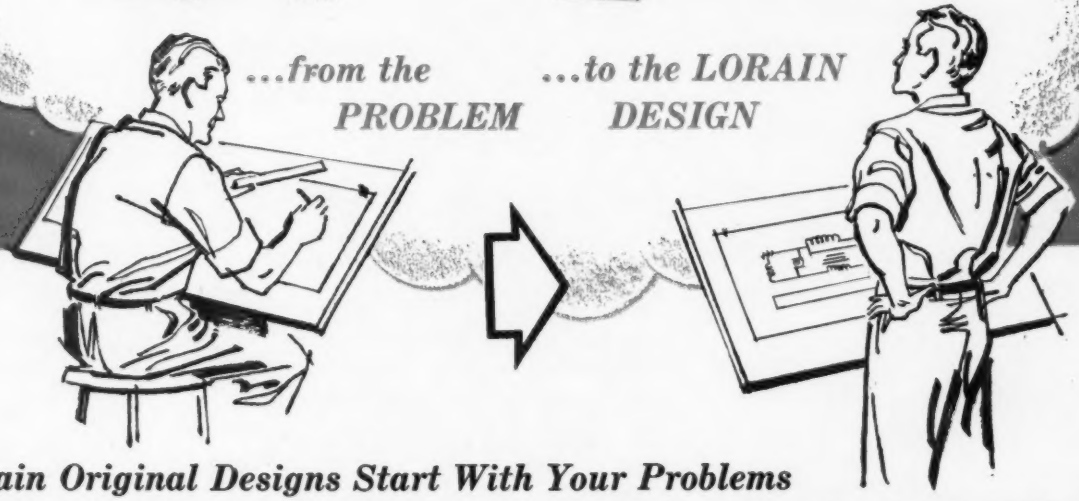
PBX Power Supply



Power Panel

Transistorized
Multi-Frequency Converter

Howler



...from the PROBLEM ...to the LORAIN DESIGN

Lorain Original Designs Start With Your Problems

Throughout 24 years of unceasing attention to the problem of economic, efficient and uninterrupted operation of telephone systems, Lorain engineers have originated equipment which has become standard in the telephone industry.

Lorain contributions to the technical advance of the telephone industry include: Fully Static Ringing Converters (Sub-Cycle); Precision Regulated Automatic Battery Chargers (Flotrol); Static PBX Supply Units (T & RT); Dry CEMF Cells; Fully Static Tone Generators; Decimonic Ringing Converters; Transistorized Sine Wave Ringing Generators; Fully Static Interrupter Equipment; DC Autotransformers (Bat-Tap); The Frequency Modulated Howler; Battery Charging Rectifiers in the Kilowatt Range; Over and Under Charger Assemblies (Dual Flotrols).

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FLOTROL® RECTIFIERS
PARTNERS IN DEPENDABILITY

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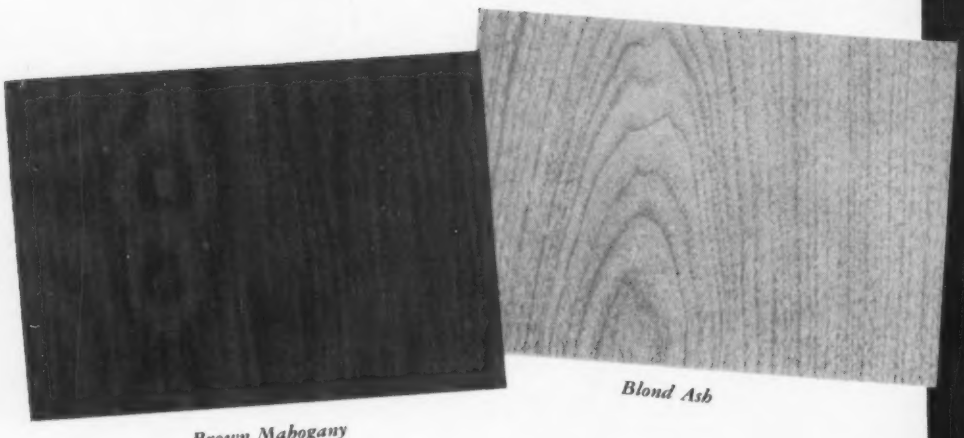
Webb Walnut ▶



Brown Mahogany

Blond Ash

With Leich's L55 PBX, your subscribers choose any of 3 attractive finishes to match their furnishings.

No matter what kind of office decor he has, your subscriber can harmonize the L55 PBX cabinet with any style of office furnishing. Brown mahogany rings true with the traditional—rich walnut and blond ash strike the right chord for the contemporary theme. And for the most discriminating, there is a handsome plain wood cabinet which can be finished in a perfect blend with the rest of the furniture.

Just one more thought! New panels can be ordered any time to change the L55 to suit restyled offices.

Yes, gone is the old monster cabinet that was off-key with everything. Ring in the *new* with the attractive Leich L55. Write for circular with full details.

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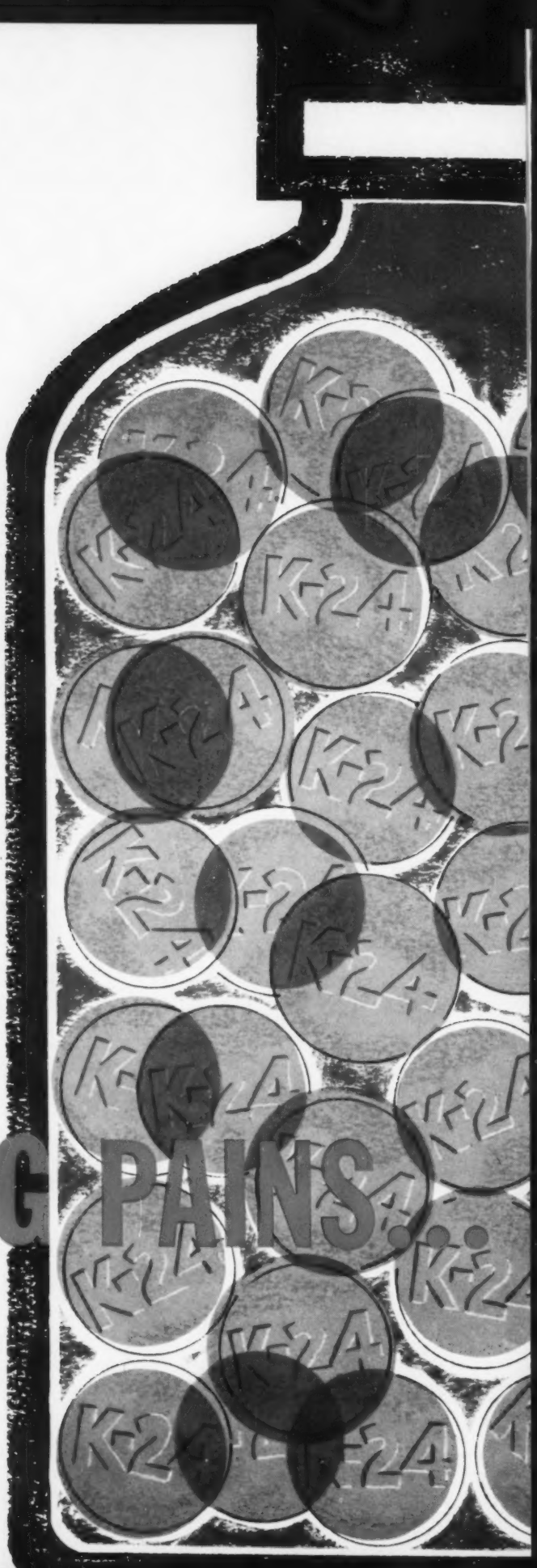
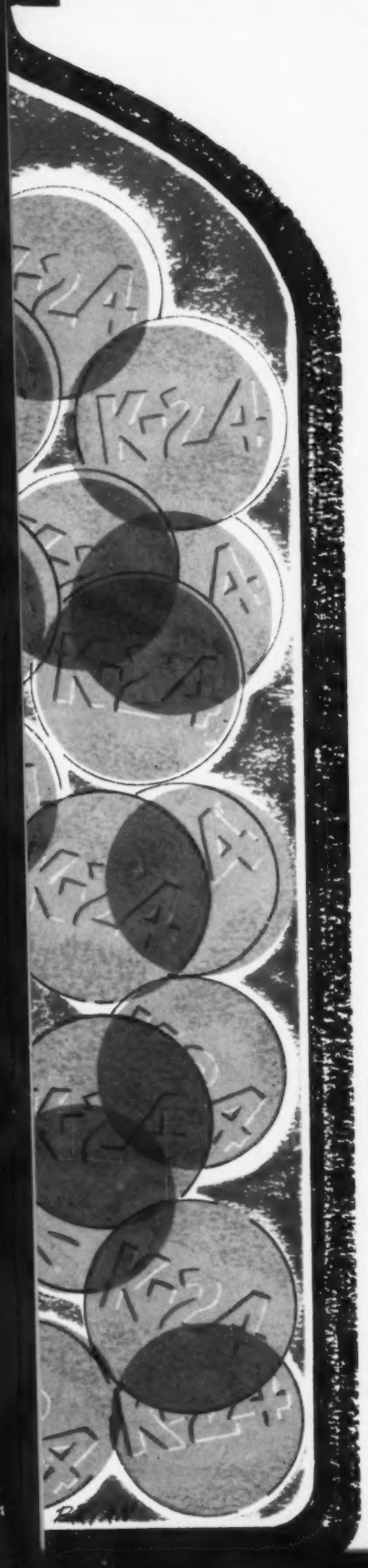




ITT KELLOGG K-24 SHORT HAUL CABLE CARRIER

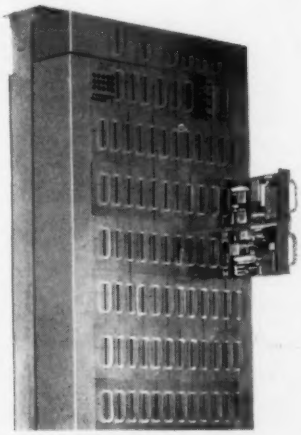
What do the country's largest systems do to meet growing in-and-around-town circuit demands *fast*, and with minimum financial outlay? More and more of them are turning to ITT Kellogg K-24 all-transistor Synchroplex Carriers with profitable results.

Designed specifically for short distance applications of 5 to 20 miles, a single K-24 carrier creates twenty-four new channels per existing two cable pairs, while maintaining full toll-standard transmission over all subscriber circuits.

By employing economical ITT Kellogg carriers to *multiply* present cable capacities, independent companies all over the country are finding they can meet the immediate demands of growing subscriber lists—and at the same time, defer major expenditures, or re-assign investment capital to more productive areas.

Printed wiring and completely transistorized for long, trouble-free service at low initial cost . . . plug-in modular unit design provides flexibility, ease of expansion . . . frequency staggering with all-new circuit design for low noise, highest grade performance . . . availability of regulating repeaters assures uniform transmission . . . equally adaptable to underground or overhead cable lines . . . rugged, compact, easy to install.

For complete details and technical information, or an appraisal of your requirements, see your local ITT Kellogg Representative or call or write the ITT Kellogg Regional Office nearest you.



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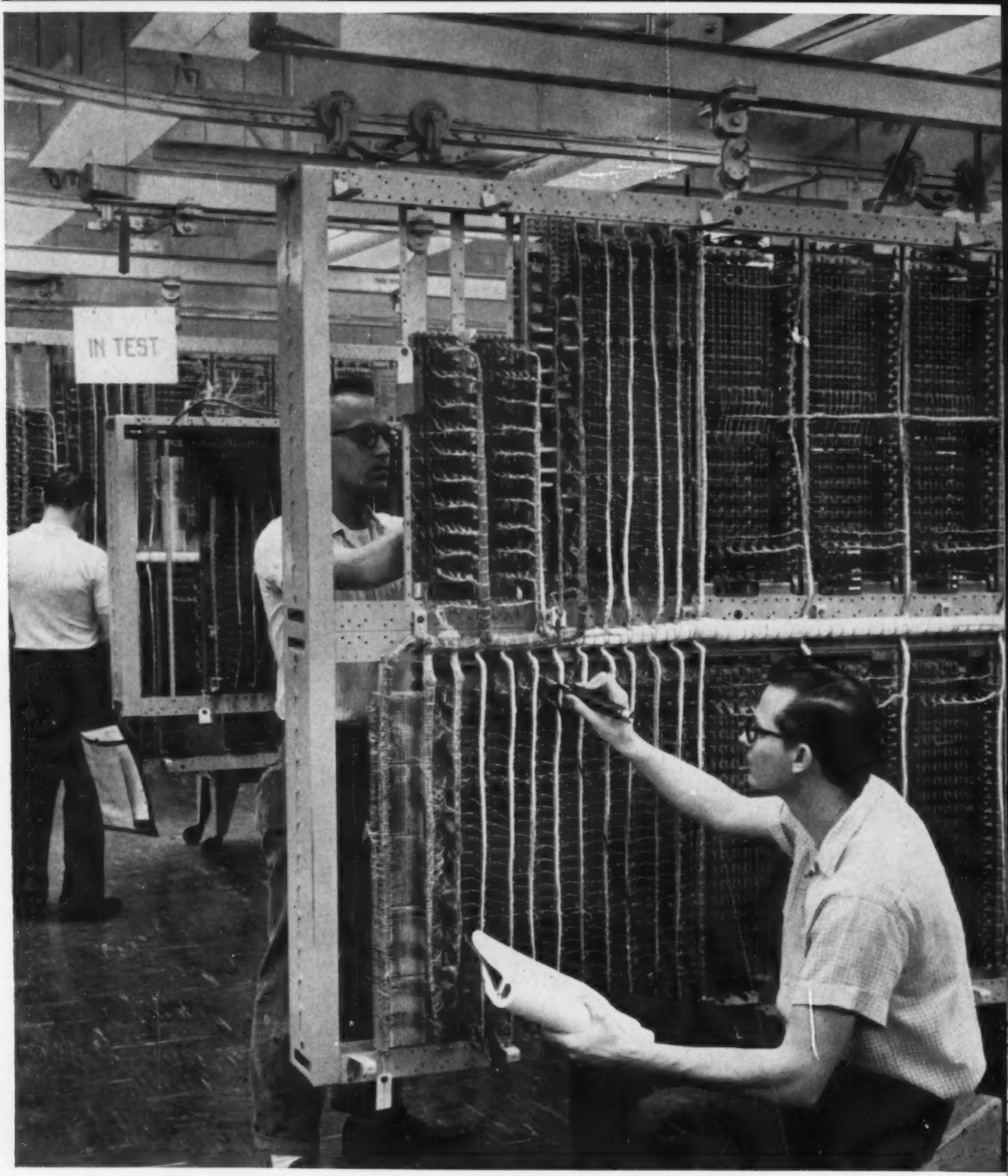
WESTERN ELECTRIC AND



TELEPHONE CROSSBAR SWITCHING FRAMES the main product of Western Electric's new Oklahoma City manufacturing plant, are shown undergoing process control checks. In 1961, Western Electric will make nearly 13,000 of these crossbar frames for shipment to Bell Telephone central offices throughout the United States.

OKLAHOMA CITY

Adding further impetus to the growth of one of America's fastest growing cities, Western Electric's new manufacturing plant in Oklahoma City — with over 30 acres under one roof — is already producing important telephone equipment for the Bell Telephone System.

Oklahoma City — with an exploding population now numbering over a third of a million, and long-known as a wheat, cattle, and oil center — is now in dramatic transition from an agricultural to an industrial economy.

An important step in this transition is Western Electric's modern manufacturing plant in Oklahoma's capital city. Its principal "products" are the workhorses of the Bell Telephone System — intricate crossbar frames used by Bell's central telephone offices to automatically switch and channel the bulk of the nation's telephone calls.

Oklahoma City already feels the benefits of this year-old plant: jobs for 3,000 Oklahomans, a $14 million payroll, and $4 million paid to more than 300 local suppliers.

Western Electric has found its Oklahoma employees capable workers and excellent citizens who share wholeheartedly in the city's civic and social life. We're proud to be in Oklahoma City, and we're confident of a bright future in the great, growing Sooner State.

Besides Oklahoma City, Western Electric has 12 other principal manufacturing locations, where we make hundreds of different products for the Bell System and for the Government, mainly for defense. Last year we purchased over a billion dollars' worth of raw materials, products and services from our more than 35,000 suppliers located in every State of the Union. Of these, 90% are "small businesses." The things we make and buy are distributed to the Bell telephone companies through Western Electric distribution centers located in 33 cities.

Western Electric

MANUFACTURING AND SUPPLY UNIT OF THE BELL SYSTEM

A PUBLISHER'S WELCOME from E. K. Gaylord of the Oklahoma Times: "We're very happy to have Western Electric here in Oklahoma City . . . it affords outstanding local job opportunities to our college students who have majored in science and technology."

WESTERN ELECTRIC BUYER, Bob Peregrin (left), examines a pair of special pliers with Otto Hart, President of Hart Industrial Supply Co., one of many small businesses in Oklahoma which furnish Western with a wide range of tools, parts, and machinery.

"SHOOTING" THE FAMILY on the grounds of the Oklahoma State Capitol Building is Western Electric stock maintenance clerk, Morris Dees. His willing subjects are wife Mary (who also works for Western Electric) and children John and Lana Lu. Oil derricks furnish a unique but characteristic backdrop.

GOOD SPORT Jerry Irby, Western Electric output tracer, uses sign language to interpret the fine art of bowling to local deaf-mute citizens. Jerry is typical of many W.E. employees who devote a great deal of their spare time to community affairs work.

Safety's Still First

By ROY SAVAGE

Roy Savage, director of supply sales, Automatic Electric Sales Corporation.

At numerous times throughout the year, the National Safety Council increases its efforts to make each of us more aware of the importance of safety. Highway safety is usually given the greatest emphasis, but safety at home and on the job are stressed also. Do these campaigns really make us more aware? And if they do, does increased awareness cut down on accidents? Both are moot questions currently under discussion by psychologists and safety experts.

The safety people say that while the total number of accidents continues to climb, the accident rate has been reduced. The psychologists dispute this statistical explanation and offer one of their own. Many people, they say, are incapable of facing unpleasant possibilities, and will tune their minds out when presented with the subject of accidents, possible disfiguration or death.

To support their view, the psychologists point to the experience of one of our leading automobile manufacturers. A few years back, this company decided to promote that season's line of cars as the safest autos people could drive. They began an advertising campaign which promoted seat belts and safety glass as standard equipment. Their sales dropped drastically, and they quickly switched their advertising approach. The psychologists explain that for many people, the company's cars had become symbols of an unpleasant possibility.

INDUSTRY'S RECORD GOOD

But what of the very good record that industry has made in this area? The businessman does not run from this problem. He accepts the challenge and acts to solve it. He uses the suggestions of the NSC concerning safe practices and safety devices. He wages a constant struggle against accidents and carelessness on the job. He inspires the same attitude in his men. The result is a greatly improved safety record.

The same businessman who may refuse to listen to warnings that affect him or his family personally, may very well heed the same warnings when they affect his company or his employees. This, according to the psychologists, is a difference between personal and business or social consequences. The businessman can see the merits of safety campaigns objectively, and he acts unemotionally to provide safety for his people and his plant.

Another factor in the businessman's favor is his desire to do the job the right way. If his employees share this desire, their safety record is bound to improve, because the correct way is always the safe way.

We don't know who has the right answer. Both views have some merit and the truth probably lies in a combination of the two schools of thought. Although the psychological answer may be correct, we feel that constant safety reminders must have some positive affect on people willing to heed them, and safety campaigns and slogans should be encouraged.

One thing we do know. Business has made the best safety record, and utility companies, especially telephone companies, have been leaders in the effort. This is due, not only to the awareness of the telephone man, but his use of safe practices and safety devices. Still more encouraging are the many new products being developed to improve safety standards still further.

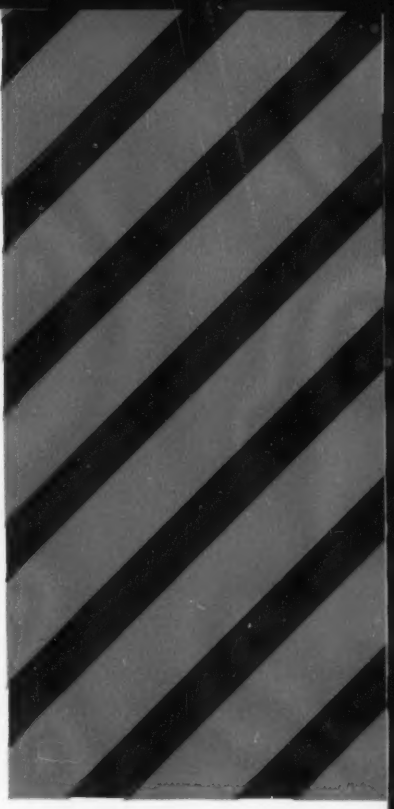
IMPROVED DEVICES

The latest safety ladder for power and telephone companies is made of wood and covered with a thick coating of fibre glass. These two materials combine high resistance to electrical charges, durability and long life.

Highway and roadside construction is an area that is mushrooming with improved safety products. The guiding of traffic around men at work is made more feasible by the use of flashing lights, flags, traffic cones and flares. These warning signals give the motorist ample time to adjust to the unusual road condition. Used properly, these devices can move traffic smoothly and safely with a minimum of inconvenience to motorists and work crews.

Proper placement of these devices is essential to their success. For this reason we recommend two NSC pamphlets* on the subject. These pamphlets show how safety can make all our jobs better jobs. They should be of great interest to anyone who wants to improve the safety standards of his company and his community.

*Copies available by writing Mr. Savage at Automatic Electric Sales Corp., Northlake, Illinois



COLORFUL TRAFFIC CONES for better traffic control. Help guide flow of traffic smoothly. Protect motorists and work crews. Vivid yellow and red colors.

warehouses:

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2915 Moore St. Richmond 21, Va. ELgin 8-9280

PROTECT YOUR MEN AGAINST ACCIDENTS

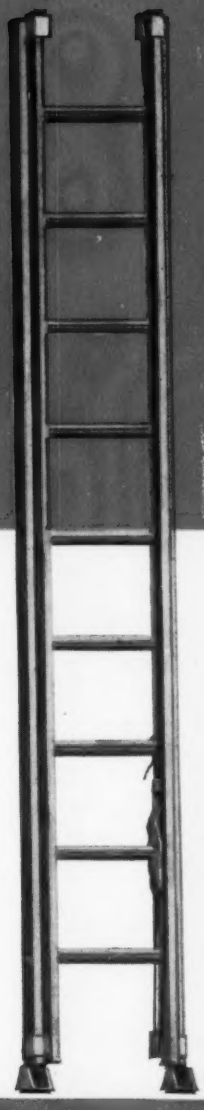
AE has everything you need for safety first

Here are just a few of the improved safety devices that keep your men safe while they work. There are others, of course... in stock... in our warehouses. All are designed for maximum protection. When safety counts, contact your AE representative.

FLASHING LIGHTS for use with barricades, vehicles. Light is detachable for use with tripod for heights up to 8 feet. Compact, lightweight unit flashes clear red beam. Batteries last up to 300 hours.

A. DANGER FLAGS. AE stocks a complete line of danger flags, including the new reflector-type nylon flag. Any flag for any use—self-standing, pole-mounting or on barricades and vehicles. AE's got 'em all.

B. VARI-FLARE REFLECTORS with Stimsonite lenses. Reflect 24-candle power over ½ mile in two directions. Four times brighter than average tail light. Flags are for daytime use. Base is stable even in high winds.



FIBER GLASS SAFETY LADDERS. Sturdy, long-lasting fiber glass coating over non-conductive wood for top safety. Bright yellow color is easy to see at a distance. Safety shoes guard against slipping.

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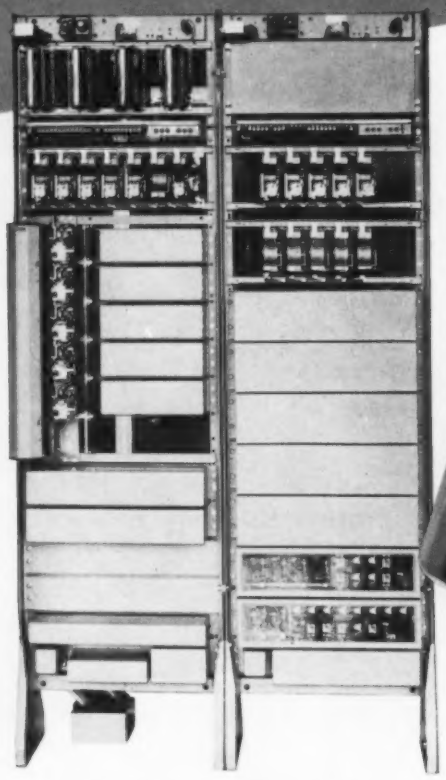

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AND ATTENDANT'S SET

DESIGNED

for SUBSCRIBER SATISFACTION . . .

Designed to make lasting friends out of your most fastidious subscribers, Type 30 PABX by USI offers prompt shipment from stock with easy installation and maintenance. Order today! Start earning tomorrow!

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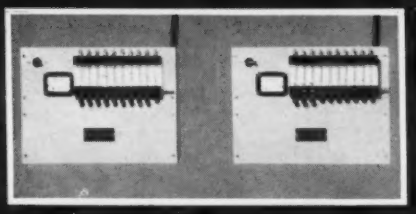


Puregas Pressurized Systems

at work for...

THE UNITED TELEPHONE COMPANY OF PENNSYLVANIA

POST OFFICE BOX 120
236 NORTH SECOND STREET
HARRISBURG, PENNSYLVANIA

J. HOWARD FEDERHOOF
Staff Engineer

April 12, 1960

Puregas Equipment Corporation
578 Oak Street
Copiague, L.I., New York

Dear Sir:

We have been well pleased with the results we are receiving from Puregas Equipment used to pressurize our cable plant. We place all cable, aerial and underground, which includes Exchange, Toll and Combination Toll of various sizes and lengths in a given exchange area under air pressure and have achieved very good results. Our cable trouble caused by water has been entirely eliminated in these areas. Interruption of service on toll lines as well as our subscriber lines is our most important concern and how much this has prevented, we cannot begin to estimate.

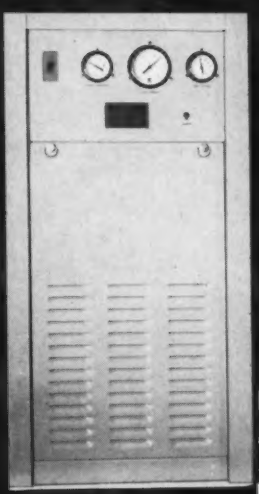
One district alone, comprising 130 miles of cable, has been trouble-free of water for nearly three (3) years. The use of air pressure also permits us to locate breaks in the sheath, bad joints and bullet holes before they can cause trouble. As a result of this, our cable plant is kept in A-1 condition and permits us to do this work in good weather and during regular working hours, thus eliminating overtime for clearing and repairing cable trouble.

Based on our past results we propose continuing our air pressure work until all the cables are under air.

Very truly yours,

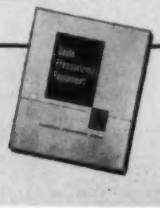
J. H. Federhoof
Staff Engineer

JHF/ajr



Model 1500
Air Dryer

The United Telephone Company of Pennsylvania has installed or ordered 24 Puregas Air Dryers to date . . . to find out how your exchange can just about eliminate emergencies with a low cost Pressurizing Program, send for the complete Puregas "Cable Pressurizing Equipment" Catalog.



PEC

PUREGAS EQUIPMENT CORP.
578 Oak Street, Copiague, N. Y.

NO. 5 OF A SERIES

* This drawing will give you some idea as to why so few people in the Middle Ages ever survived to enjoy middle age. Not so the Warren Transistor Power Pack, however. This complete transistorized power, ringing, and tone supply for PBX, PAX, and PABX installations positively refuses to age. It requires no nursing. There is no maintenance problem.

Here are other money-saving features:

... no standby equipment is needed where batteries are used in PBX (both ringing and tone generators are dc operated)

... initial cost is lower than the cost of buying individual components separately.

... this unit packs more power (up to 20 amps) in less space than any other power pack available.

Warren offers a complete line: seven 24-volt models and seven 48-volt models, none of which look like the one in the drawing. (We've corrected the situation below.)

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JUST FOR THE RECORD..... **WARREN WAS FIRST WITH A COMPLETE LINE OF TRANSISTORIZED POWER PACKS * FOR THE TELEPHONE INDUSTRY**

(AND WITH SILICON RECTIFIERS, YET!)

This is what a 48 TPP 20 48 Volt, 20 Amp. Transistor Power Pack really looks like.

FIRST IN TRANSISTOR PRODUCTS FOR THE TELEPHONE INDUSTRY

IN THE NATION'S CAPITAL

BY FRANCIS X. WELCH, WASHINGTON EDITOR
AND EDITOR, PUBLIC UTILITIES FORTNIGHTLY

Kennedy's anti-trust chief's answer to telegrapher union's complaint against Bell System TELPAK shows inexperience in handling routine matters. President's FCC reorganization plan hits snag in House. Ten companies talk about space

THE NATION was heartened last week by President Kennedy's announcement that the United States Government is going all out to close the space gap between this country and the Soviet Union in an effort to put a man on the moon who will carry the Stars and Stripes. This is an accomplishment devoutly to be wished. Mr. Kennedy's earlier pronouncement that his administration would do all in its power to close the missile gap and various other gaps and shortcomings, which the "new frontier" is supposed to correct, will have the nation's general support.

But in his own administration hierocracy there is one gap that President Kennedy has not succeeded in closing and it could be quite critical to his domestic program. That is the gap between the nose and the chin of some of his principal officers. It is naturally to be expected of any new and young administration that officials, fresh on the job, will take a little time to understand fully the wisdom of the unspoken word or the unwritten letter. It will be recalled that the Eisenhower administration had not even gotten on the job in 1953 before his designated Secretary of Defense, Charlie Wilson, had an attack of what he himself laughingly called "foot-in-mouth disease."

As pointed out in this department last week, at least part of the reason for the defeat suffered in the House Government Operations Committee by the White House, on its proposed Federal Communication Commission reorganization plan, was the result of some bad timing of public statements. These are not bad speeches. They were good speeches. Probably the majority of people would agree that all is not well with television or the FCC. But the resentment coming on top of congressional suspicions that the reorganization would take the control of the FCC away from Congress and hand it over to the White House was enough to turn the tide.

There is no need to point to other areas where there has been more talk than action—even at the cabinet level. But one of these extra-zealous statements by a new federal official certainly raised hob with American Telephone & Telegraph Co. stock last week. This was the letter written by the new Assistant Attorney General Lee Loevinger, chief of the Anti-trust Division, to E. L. Hageman, president of the Western Union division of the AFL-CIO Commercial Telegraphers' Union

It was perfectly right and proper for Mr. Hageman to have complained to the Justice Department that, from his view, the Bell System's new TELPAK service, as authorized by the FCC, was gobbling up the telegraph business. It was only proper and courteous for Mr. Loevinger to reply to such a complaint, which must come into his office by the daily dozens.

But at this point, an old and experienced hand around Washington would have taken refuge in the safe and polite form letter, thanking the union official for bringing the matter to the government's attention and promising careful consideration of the same. Instead, Mr. Loevinger, in his sincerity and enthusiasm for anti-trust enforcement, sat down and wrote quite a letter to Mr. Hageman, informing him, among other things, that the government had actually started an anti-trust investigation of the American Telephone & Telegraph Co. He said that the Justice Department had received "a number of complaints" along these lines, and that, as a result, "it is conducting an investigation of various aspects of the telephone industry." On the completion of this investigation, continued Mr. Loevinger, "we will be in a position to determine what action can best be taken in response to the various complaints we have received."

Actually this letter did not commit the government to anything. And, as it turned out, it was not much to which it is committed. But it was enough to start a rumor in Wall Street that the federal government was going to follow up its recent anti-trust victory over the duPont stockholders in General Motors with a frontal attack on that bastion of the blue chips — American Telephone & Telegraph Co.

Rumors have a way of snowballing, even on a hot day in Wall Street, and when this particular extrusion of intelligence from Washington hit the fan of mass communications by the press wires, there was plenty of reaction all over the country. The next day, Mr. Loevinger had a very reasonable explanation. He said that the Justice Department was simply conducting, and had been conducting "for some time, an investigation into a big and very complex industry." He said he was in

no position to say what he expected from such an investigation.

In other words, this would appear to be more in the nature of some sort of routine checkup on the Bell System (along with other large corporate enterprises), which has been going on in Washington for a long time—even all through the Eisenhower administration. Perhaps it was the fact that Mr. Loevinger did refer to some specific aspects of Bell System operation which lent credence to the belief that this was more than a routine checkup. Loevinger was quoted as referring not only to TELPAK but also the consent decree of 1956 in the Western Electric Co. case and various aspects of projected space communications satellite systems.

Where does all this leave us? At this writing, AT&T stock had not fully recovered from the initial shock. Perhaps it will before these lines appear in print. And perhaps there is good reason to believe—adding together a number of things, including activities of the House Judiciary Committee — that the Justice Department may be cooking up more than a routine dish for Ma Bell before the Kennedy administration is much older. But this incident, as well as the FCC television critique, may well serve to impress on some of our new and able officials the importance of not telegraphing their punches or writing them either.

The FCC Reorganization

There was still a possibility that the Kennedy administration could snatch victory from defeat on the floor of the House of Representatives with respect to its FCC reorganization plan. But judging by the vote in the House Government Operations Committee, the outlook is not favorable. This is a little surprising in view of the resounding success which the other Kennedy reorganization plans had in the same committee—those affecting the Securities and Exchange Commission, the Federal Trade Commission, and the Civil Aeronautics Board.

All of these other plans were very similar in principle to the program for the FCC. All would concentrate more authority in the chairman who would be handpicked by the President. All would delegate decision-making authority to panels and other levels below the full commission, with limited rights of appeal to the full commission. Yet, the others scored without opposition while the FCC program got thrown for a loss. Why?

Aside from what has already been mentioned about talking out of turn, or at least talking on the wrong day (before the plan was automatically approved), perhaps the answer lies in the lack of support within the FCC itself. All the other commission plans were unanimously approved by the commissioners who sat on them. But the FCC plan could not even muster a majority of commissioners to go down to the congressional committee and speak for it. All the Republicans and at least one Democrat said they were opposed.

So, the committee recommended to Congress a resolution opposing the reorganization plan to strengthen the hand of Chairman Newton N. Minow in directing the FCC's activities. However, Representative Harris, chairman of the House Commerce Committee, will introduce *legislation* giving Minow virtually all the additional powers requested by the President.

A spokesman for the House Commerce Committee said the legislation would carry all the provisions requested by the President except one that would empower the chairman to delegate tasks to other commission members. The spokesman said Representative Harris planned to hold hearings on the reorganization legislation.

Consideration of the reorganization plans for the other agencies will be required only by a special petition that must be signed by more than half of the House members. The President's plans go into effect 60 days after they are made public unless vetoed by either the House or the Senate.

There may be other reasons for the opposition to the FCC plan. Some congressmen feel that the FCC is in a different category from other agencies that are chiefly concerned with lawmaking functions. How to increase the efficiency of FCC operations without weakening its character as an expert, bipartisan agency reflecting a variety of viewpoints is a real problem.

Experts say that hearing cases constitutes less than 5 per cent of the commission's work load, but this is a most important part of its job. The White House plan was to give the agency more flexibility in dealing with such cases except in a limited number of cases that only the FCC itself can properly handle. The commission would still have authority to review controversial decisions made by panels or individual members.

FCC Chairman Minow had a reasonable explanation of his widely publicized criticism of television broadcasting. It might be summed up in the old phrase, "Didn't know it was loaded!" Actually Minow felt that, in talking to the national broadcasters association's convention, it was a good oppor-

(Continued on page 45)

Convention Calendar

1961

Association	*Date*	*City*	*Hotel*
Washington-Oregon*	June 15 and 16	Victoria, B. C.	Empress
New York	June 19, 20 and 21	Schroon Lake	Scaroon Manor
California	June 26, 27, 28, 29 and 30	Honolulu, Hawaii	Hawaiian Village
Alaska	Aug. 21, 22 and 23	Palmer	Unannounced
Tennessee	Sept. 6 and 7	Nashville	Hermitage
Arkansas	Sept. 11 and 12	Hot Springs	Arlington
Rocky Mountain	Sept. 13, 14 and 15	Boise, Ida.	Owyhee
Georgia	Sept. 14 and 15	Jekyll Island	Corsair Motel
Michigan	Sept. 19, 20 and 21	Grand Rapids	Pantlind
Nevada	Sept. 19, 20 and 21	Elko	Stockmen's
New England	Sept. 24, 25, 26 and 27	Poland Springs, Me.	Poland Springs
West Virginia	Sept. 26 and 27	Wheeling	Olgebay Park
USITA	Oct. 8, 9, 10 and 11	Chicago	Conrad Hilton
South Carolina	Oct. 23 and 24	Clemson	Clemson House
Virginia	Oct. 26 and 27	Roanoke	Roanoke
Oklahoma	Nov. 8 and 9	Oklahoma City	Skirvin
Alabama-Mississippi	Nov. 13 and 14	Birmingham	Thomas Jefferson
Florida	Nov. 26, 27 and 28	Miami Beach	The Carillon
North Carolina	Dec. 4 and 5	Pinehurst	Carolina

*Joint meeting

Bill Forms for Computers

General Telephone Co. of California designs new forms for customers' bills for use in electronic data processing system. Produces up to 60 statements per minute.

By LESLIE L. NEUMEISTER*

DESIGNING telephone bill forms especially to take advantage of the capabilities of our high-speed electronic computer equipment has enabled the General Telephone Co. of California to realize production rates of up to 60 complete customer statements per minute.

This is double the output we would have realized through a conventional approach to a computer system. The increased capacity, we feel, is a direct bonus from a program of scientific form design.

Acceptable to Customers

Just as important as the factors of increased production and reduced unit paperwork costs is the knowledge that we are now delivering telephone bills which are more acceptable to our customers.

This factor of customer satisfaction is critical in our case because of the size of our operation. At General Telephone of California, we do central billing for all of our 800,000 subscribers, utilizing a 705 II.

Answers to All Questions

Our needs for a data processing system to perform this billing are emphasized by the fact that our subscriber list now has 100,000 more names than when we installed our electronic data processing (EDP) system in December, 1958.

When you are running a mass production billing operation on this scale, the larger you get, the more trouble you encounter with each individual customer question or complaint. For this reason it is necessary to plan your statement forms so that they satisfy the most detailed question which a customer would ask.

Maximum Use of Computer

At the same time, when you go to an EDP system, you are taking on a major item of overhead. With a billing operation as big as the one at General Telephone, today's technology pretty well demands an electronic computer. At the same time, however, it is important that every minute of operating time on the computer be made to pay off with a maximum output of usable data.

In our experience, the basis of economical EDP operation in a major utility billing system lies in designing forms which will:

L. L. NEUMEISTER

(1) Satisfy customer service requirements.

(2) Get the greatest number of work units out of the system in the shortest time.

Committee Studies Bill

We have just completed a change to a newly designed customer bill which was developed as a result of an intensive study by a company committee. This committee had as its objective the design of a bill which would be understandable by our subscribers, yet would be designed with efficient computer operation in mind. We believe our new bill is effectively meeting both of these goals.

Satisfies Two Requirements

To gain computer efficiency our billing form satisfies two important requirements:

(1) Our current bill contains the complete subscriber statement on a single sheet of paper which measures 6 inches wide x 8½ inches long. This bill is prepared in sufficient detail to satisfy just about all requirements of our customers. It is a stub-type statement, with a detailed listing of up to 37 separate charge categories in the upper portion. A consolidated statement of account appears on the lower stub, which the subscriber returns with his check.

This single sheet of paper replaces a multipart paperwork approach to subscriber billing which was used prior to computer billing. Under our previous system, we used a short, consolidated form to cover total account charges.

*Mr. Neumeister is Director of Data Processing of General Telephone Co. of California, Santa Monica, Cal.

LEFT: Machine attendant takes close look at bills printed two at a time at the rate of 500 lines per minute by an IBM 720-A. Almost 800,000 customers are billed each month, resulting in the printing of approximately 215 miles of billing paper on two printers at the General Telephone Co. of California. An estimated additional 10 miles of continuous form paper is used each month to print reports. RIGHT: Subscribers are billed in 15 cycles each month on a single computer controlled from this console.

Then, we needed a separate sheet for a listing of long distance and special toll charges. Issuing of statements under this program obviously required a tedious hand-collating job.

Written Two at a Time

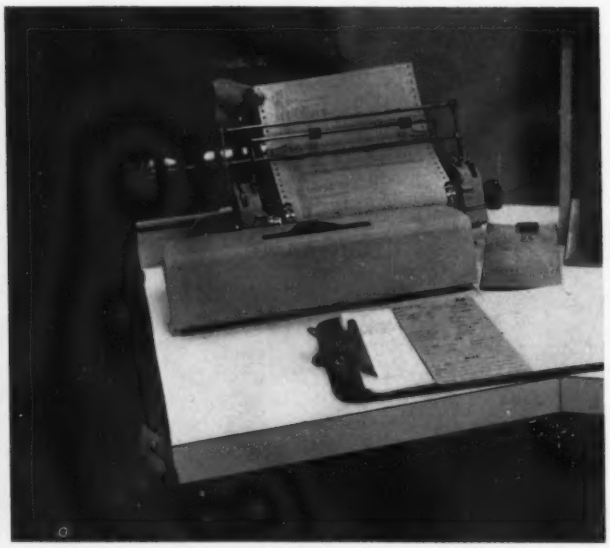
(2) Bills are designed so that they are written two at a time on our high-speed electronic printers. This tremendous economy is a direct bonus which comes through considering equipment capacity in the designing of the forms for the EDP system.

Our EDP staff and the Standard Register designers estimated that it would have required four 720-A printers to meet our printing requirement if we prepared bills one at a time. Knowing that the computer could set up information in virtually any pattern desired for off-line printer operation, they decided to capitalize on this capability by printing bills for two separate subscribers side by side. By using this technique, we are now effectively meeting our printing requirements through the use of two 720-A printers.

The forms which have been put into use successfully since December, 1958 are printed on a 16-pound high-bulk paper stock. This stock is tinged with a light green pigment. The design features of this Kant-Slip continuous form bill even provide for its processing after customer payments have been received. The stub of each bill is prepunched with a hole used to place it on a ring for forwarding in batches when subscribers choose to pay their bills at our local service offices.

In actual operation, our billing represents close coordination between the Santa Monica office, where our EDP equipment is installed, and our Long

(Continued on page 40)



LEFT: Millions of facts concerning the General Telephone Co. customer accounts are stored on magnetic tape at the Santa Monica billing office. Each tape is carefully labeled and filed for future use by the librarian. RIGHT: Day-to-day reports of accounts receivable, overdue statements, etc., are an important by-product of the electronic data processing billing system. An up-to-date report is being studied here, as it is printed on special report form paper.

How Subscribers Look at Trouble — Section 5

By L. N. MARTIN

SOME YEARS AGO, when the writer began his telephone career, after several weeks he felt he was becoming accustomed to the daily routine of installations and repairs. He was beginning to think that the telephone business was as prosaic and unexciting as the grocery store where he had formerly worked. Then one day there was a storm. It wasn't a tornado—just a summer thunderstorm with a few heavy puffs of wind, torrents of rain, some hail, and plenty of lightning.

There was trouble all over town—poles down, wires tangled, drops down, and hundreds of fuses blown. There wasn't any cable trouble, because the exchange had no cable except a 100-foot entrance cable. Everybody worked from dawn to dark. It was several days before service was restored, and for several days thereafter reports came in of cases which had been overlooked in the mad rush. Some subscribers were without service for as long as a week.

Later the writer learned that this, too, was routine. Storms came. They caused lots of trouble. It was cleared as soon as possible. There was nothing else that the company could do about it. A storm was an act of God, wasn't it?

What did the subscribers think about this? They didn't like it. If a man needs a telephone, he needs it every day. However, like the company, they thought that it was unavoidable—just a peculiarity of the telephone business.

Minimizing Storm Damage

That was many years ago. Times have changed. Later the writer worked for a telephone company that believed something *could* be done about storm trouble. A man does not build a house that would fall down in every thunderstorm. Why not build a telephone plant that would be equally resistant? Of course there are storms which destroy well-built houses and uproot sound trees. Such a storm will damage aerial telephone plant.

The writer once supervised trouble in a district. The exchange supervisors were required to explain all unfavorable reports, such as excessive trouble and excessive clearing time. He soon found out that the magic words "storm trouble" were used to excuse any item that was out of line. He investigated one of these alleged storms.

PART 80. The preceding article in this series appeared in the April 22 issue.

No houses were destroyed, no roofs were blown off, no sound trees were down. Some dead or hollow trees were down and some small limbs were lying about. One house at the edge of town had been struck by lightning. Citizens interviewed said it was just an ordinary thundershower, nothing to worry about.

We had to make a rule: "If there is no danger to other types of property, do not call it storm trouble."

Classifying Storms

We may well divide storms into two classes based on the amount of damage done to other than telephone property. In one class, which we might call "an ordinary storm," we would place thunderstorms and the winter ice glazes that occur in the northern two-thirds of the United States. These storms should cause little or no increase in telephone trouble.

The other class would be "disaster storms" such as some very severe thunderstorms, tornados, hurricanes, and heavy ice glazes followed by very high winds. This class of storm may be expected to cause increased telephone trouble.

There are several developments which have made it possible to construct telephone plant that will resist ordinary storms. In many instances open wire is being replaced by cable. Tall poles have been replaced by short, sturdy poles just high enough to clear driveways. Also, cable is being placed underground, where it is immune to storms.

At first, the cable frequently suffered from lightning and powerburns and the combination of these called "power arc follow-up." This type of trouble has been almost eliminated by modern protection practices. Trouble due to moisture entering the cable was also a problem for many years, but is now controlled by pressurizing and the use of plastic insulation instead of paper.

The winter ice problem has been studied, and the nation has been divided into three zones according to the amount of ice loading which may be expected. Construction practices for each zone have been prepared, and if these practices are followed, the plant should resist the winter ice that is normally found in that particular zone. Unusually heavy ice loading with high wind may, at times, cause damage.

Recording Storm Trouble

For some time we have been discussing subscribers' reactions to things like excessive trouble, excessive clearing time, and repeated trouble. This involves records of all of these items, so that they may be measured and brought under control. It also involves a definite routine for the daily handling of the trouble.

Some telephone men will say: "That is all right in ordinary times, but when we have a storm we had better forget our routines and records and devote all of our time and energy to clearing the trouble. To record the storm trouble would just spoil our record, and there is nothing that we could have done to prevent this trouble." There are, of course, two sides to every question.

We do not agree with the idea that time will be saved by dropping well-established routines in time of emergency. Suppose that a school had practiced a fire drill until they could vacate the building without confusion and in record time.

Then, one day the school house caught

fire. The principal said: "This is a *real* fire. Forget your fire drill and everyone get out as best he can."

This may be a somewhat overdrawn comparison, but we firmly believe that a heavy trouble load due to a storm can be handled most efficiently by following the established trouble routine in every detail. This will also assure a complete and accurate record of the storm trouble.

Subscriber's Viewpoint

The purpose of keeping records of the items which affect the subscriber is to secure an accurate record of the trouble as seen from the subscriber's viewpoint. This record will enable the company to improve its trouble results and to secure better public relations. If any or all storm trouble is omitted from the record, the company no longer has a true picture of the trouble actually experienced by the subscriber. Also, if trouble caused by certain disaster storms is to be omitted from the record, where is the line to be drawn? Won't some exchange supervisors abuse this privilege in order to make their record look better?

A disastrous storm may cause surprisingly few subscriber trouble reports. If a man's house (including the telephone) is blown away by a tornado, and possibly some of his family are injured or killed, he does not report his telephone out of order. In a typical tornado path, where every building is destroyed or made uninhabitable, there may be no subscriber trouble reports. In fact, there may be no "company" reports. When a house is destroyed by storm, fire, or flood, there is no point in making a trouble report.

An "out" order is issued to clear the records and stop the billing. When the subscriber secures temporary living quarters, he may or may not want a telephone there. When he rebuilds (most of them do rebuild), he will want his telephone reinstalled. The company will have plenty of time to provide the facilities while the house is being built.

It may be seen that a disaster such as a tornado, while very expensive for the company, does not necessarily mean excessive trouble. However, a tornado's path is usually clean-cut. The storm path may be only two or three blocks wide, and outside of that path there may be no damage. In fact, people living only a few blocks away may not know that there has been a serious storm.

If an area outside of the storm path is fed by a cable that passes through the storm area, there is real trouble. Service must be quickly restored to these people, even if it is necessary to lay a cable on the ground.

Northern Ohio Telephone Co., Bellevue, O., on May 10 held its annual employe recognition banquet. The affair (shown above) was attended by 470 employes and included presentation of service emblems by William C. Henry, president and general manager, plus entertainment and a dance.

Hurricane Damage

The writer has had no experience with the hurricanes which occur on the Atlantic and Gulf coasts. However, he knows that those storms cover a wide path, involve very high winds and sometimes tidal waves, and are very destructive to buildings and telephone plant. They can be predicted with accuracy several days in advance, which undoubtedly saves many lives and some portable property. However, the telephone company cannot roll up its plant and put it in a safe place when such a storm threatens. What does the subscriber think about telephone trouble caused by a hurricane?

Everybody knows about the storm. Nearly everyone has suffered damage to his own property. Therefore, no one is surprised to find that his telephone is out of order. Is the telephone company doing everything possible to restore service?

When the subscriber goes out on the street he sees telephone workmen and telephone trucks everywhere. The license plates indicate that many of these trucks and their crews have been sent in from distant states. He is convinced that the telephone people are making a heroic effort to clear up the damage. He will wait patiently for his own service to be restored.

He may not even report his telephone out of order. While this reduces the number of trouble reports, it produces a situation that later may lead to very unfavorable subscriber reactions. After such extensive storm trouble has supposedly been cleaned up, there will always be some stragglers—cases that the subscriber did not report, and the company did not detect. The subscriber will ultimately lose patience and make a report, but by then his telephone has been out of service many days longer than was necessary.

Call All Subscribers

The company should (and usually does) test all lines before pronouncing the storm trouble cleared. However, this is not enough. Some kinds of trouble are not detected by the usual VM test. Also, it must be remembered that while the company was concentrating on the storm trouble, the usual types of trouble, not associated with the storm, were occurring daily. The writer believes that each subscriber should be called, and those who do not answer, should be visited by a repairman. This will be somewhat expensive but well worth its cost as a public relations measure.

In our discussion of storm trouble, we have considered damage caused by high wind, ice, and water, but have said little about lightning. This important subject is being reserved for another article.

This concludes our five-section article under the specific title: "How Subscribers Look at Trouble." However, we are not dropping this theme. In future articles on any phase of trouble, we will ask "What does the subscriber think about this?" And, we will try to answer our question.

Providing a service that pleases a large majority of the subscribers not only leads to good and pleasant public relations but is "good business" for the company in every way.

today's Highlights

of finance-taxes-business trends

by Willard F. Stanley

BOND MARKET LEVELS OFF: Despite a substantial increase in the number of new funded debt issues of utilities coming to market within the 30 days ended May 22, the bond market held relatively steady during this period, although the last 10 days of the period witnessed a mild downturn in prices with accompanying moderate increase in bond yields. It's significant that the tabulation of the Wall Street Journal at May 18 comprised no less than 14 utility funded debt issues compared with only eight such issues in the tabulations which appeared 30 and 60 days earlier. Average bids were very close to average offering prices of these new securities, with the result that the yield based on the then-current bids was but two decimals (0.02 per cent per annum) higher than the average yield based on the offering prices. Of the 14 offerings, eight showed lower, and six higher, current bids.

The bond market has held up fairly well considering the substantial volume of new utility debt securities which it has been compelled to absorb recently. For the future, the tendency may be toward mildly higher yields. With stronger indications of the recession's end, it seems unlikely that drastic steps will be taken to lower interest rates. As an example of this trend, in the last few weeks the Federal Reserve has appeared to be prosecuting its program of buying longer-term federal obligations less aggressively than in the recent past.

Nothing is indicated for the immediate future which seems to warrant utilities in proceeding otherwise than according to normal schedules in bringing to market funded debt issues and other senior securities.

As to common stocks, with average price-earnings ratios for 126 electric utility holding and operating companies at slightly over 21 times at Apr. 24 (as shown by the Charles Turner tabulation for May, 1961) and with relatively equal strength in telephone and gas equities, the time seems entirely suitable for maximum offerings of common stock to finance future expansion. A recent study of these 126 companies showed that the 15 highest ranking price-earnings ratios among them ranged from 28 to 34.9 times at the above date, with an average for this group of 30.9. The cost to the electric utility with the highest then-current price earnings ratio (34.9) of selling additional common stock would have been only about 2.87 per cent before selling expense. Even at the industry average price-earnings ratio, the cost of selling common stock equities would run less than 5 per cent before expense, an unprecedentedly low figure. So, sales for future equity needs would seem justified under these conditions within any reasonable future time limit, despite the always-present possibility of higher prices at later dates.

* * * *

STOCKS IN SURPRISE RALLY: The 30 days ended May 26 witnessed a somewhat sur-

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prisingly sharp rally in the stock market. The New York Times 50-combined-stock average stood, at the mentioned date, over 4 per cent above its close on Apr. 28. Other such "averages," such as Dow-Jones, were at or near all-time highs.

Apparently the market had by no means fully discounted improvement in business conditions which was registered during the interval between the two above dates. Among the improvements were a 2½ per cent increase in industrial production (an unusually high percentage for a single month), better tidings as to steel output and automobile sales, plus general volleys of opinions that the worst of the recession was over. Market gains were, however, somewhat on the spotty side. For example, on some days of sharp rise in the market averages, more than 40 per cent of the New York stock exchange issues registered a decline, which hardly points to unanimous upward movements in market prices. The market was probably helped in registering recent gains by relative easing of tensions in the Laos situation, plus a gradual cessation of the shouting over Cuba. The news of the "two K's" meeting in June may also have been a favorable factor, although it has its possible seamy side, businesswise, for if the meeting should prove successful in permanently reducing international tensions, then it would probably register unfavorably in terms of national defense spending, etc. In the current situation, when we're not threatened with the possibility of war we're worried about the horrors of peace.

The New York Times average at the May 26 closing figure represented a rise of 12 per cent from the 1960 year-end; a decline of 7 per cent from the 1959 close; and an increase of 6 per cent over the end of the preceding year.

Even if the recession is, as generally predicted, on the way out, prices of many stocks have advanced to points where in terms of price-earnings ratios and dividend yields they seem on the topheavy side, with some of them actually above, and many at or near, their all-time highs. Some correction may logically be looked for in the near future but this seems unlikely to turn the permanent general trend of the market downward. On balance, selected stocks of cyclical type, such as steels, for example, may be expected to move further upward, given any encouragement in the general market trend. But at these levels, stocks generally are particularly vulnerable thus requiring an unusually high degree of care in their selection for purchase. As indicated above, in the discussion of equity financing, most of the utilities of all types have made an excellent market showing in recent periods. With every reasonable expectation of continued improvement in earnings of most companies, they should continue to forge ahead. If the market is favorable, they will probably reflect it, at least moderately, while even if a drastic correction in the general market levels should develop, there is the probability that utility stock prices will be salvaged by their defensive character, with investors switching from the more volatile issues to those giving greater assurance of safety.

* * * *

RECESSION END NOW SEEMS NEAR: With the wealth of favorable statistics which recent weeks have afforded, there seems little doubt that the end of the recession is probably in sight. This, too, seems to be the almost unanimous opinion of economists and business leaders, as well as top people in the administration. Earnings reports for the first 1961 quarter continue to run generally behind the previous year, but this reflects the relatively dim past (January-February) rather than the more recent past (April-May) with respect to which latter period the more favorable statistics have recently been recorded.

* * * *

PRESIDENT'S TAX CREDIT PROPOSAL: Strangely enough this proposal seems to displease almost everybody testifying at the hearings, although it seems infinitely preferable to tinkering with depreciation allowances, which, after all, must be offset in the future, giving only the free use of deferred taxes during the deferral, whereas the tax credit gives a permanent reduction in taxes. Utilities should certainly make an effort in every legitimate way to be included under the credit proposal and also to press for its adoption. The benefits of the proposal applied to telephone and other expanding utilities, could be substantial.

NEBRASKA STATES GOALS:

• Modernize Management Procedures

• Emphasize Spirit of Cooperation

By HELEN HARDIN

SUCH VITAL considerations as keeping the nation and the state strong defensively, and preserving America's free enterprise system, as well as specific management problems relating to accounting practices and rates, and the relationship of the industry to Nebraska's department of roads, sparked the program for the 61st annual convention of the Nebraska Telephone Association. The meeting was held on Apr. 5 and 6 in the Hotel Cornhusker, Lincoln, with a registration of 455 members and guests.

Jack Dwyer of Hartington, president of the association, presided over the convention, and reported the year's activities, after which J. E. Nelson of Lincoln, secretary-treasurer, gave his report.

In the basic area of accounting and rate matters, B. L. Overcash, a Lincoln attorney, spoke on "Accounting Practices and Rates." Stressing the importance of the accuracy and integrity of a company's records, Mr. Overcash recalled for his audience that the matter of fixing rates was greatly affected by the decision of the Supreme Court of the United States in 1898, in the case of Smyth versus Ames, in which the court laid down the rule that rates should not be fixed upon the basis of book figures alone, but should reflect other factors, including reproduction costs.

In various utility cases, the speaker referred to a lack of public confidence, in the early days, in utilities' record-keeping. In a decision in 1916, Nebraska's high court termed a telephone company's bookkeeping "defective," and said it was "difficult to arrive at the actual cost of the property."

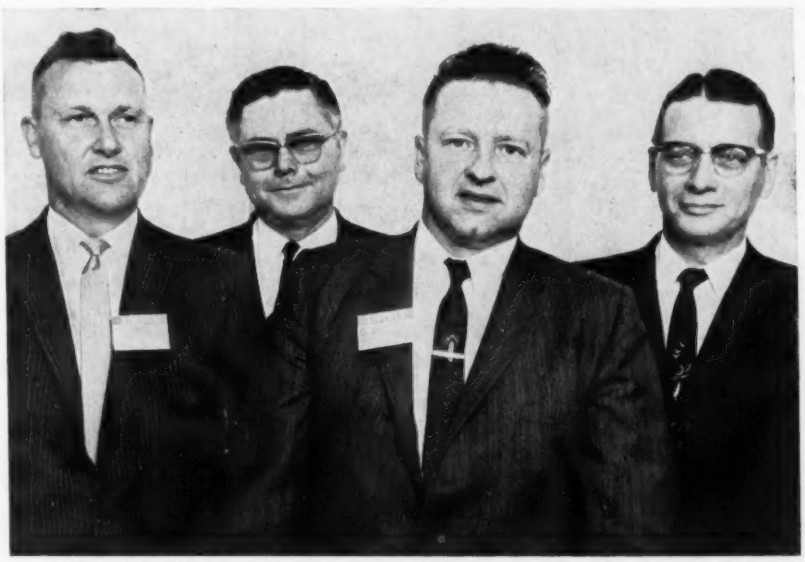
The Nebraska Railway Commission came into being in 1906, following the period during which the public looked with suspicion on the records of public utilities, he said.

Together, the commission and the Interstate Commerce Commission, which was created in 1887, set up a uniform system of accounts for telephone companies prescribing complete records for rate making and other functions.

Today, the pendulum has swung to public confidence, Mr. Overcash believes, and:

"As a result of the united action of the public utilities and the regulatory commissions, there has grown up in later years a strong presumption of good faith and correctness in the basic records required to be kept by public service companies. . . . the public confidence which exists in the accuracy and integrity of utility accounting today is a great asset to this industry. Without such an attitude, this industry would not have been able to expand and develop."

Mr. Overcash noted, among the many factors influencing commissions' decisions on rates, inflation; and said in arriving at a decision, it is often simpler and easier to utilize book figures



Newly-elected officers of the Nebraska Telephone Association. Jack Dwyer, of Hartington, far right, outgoing president of the association, poses with, left to right, Clifford Thompson of Dunning, vice president; J. E. Nelson, secretary-treasurer, of Lincoln; and LeRoy Sieckmeyer of Blair, incoming president.

Both veterans and younger men and women of the Nebraska telephone industry enjoyed examining the exhibit of historic telephone equipment sponsored by Nebraska ITPA's. Telephones shown included some real "pioneers" as well as instruments used in the early years of this century and in the period prior to World War II. LEFT PHOTO: Two young ladies at the convention obviously are glad for the changes invention has brought as they examine some of the earlier equipment. RIGHT PHOTO: A couple of Nebraska conventioneers, a lady and a gentleman, boldly pick up receivers, representing great contrasts in the development of the telephone. Her telephone is a wall set used before 1899. He is on the listening end of a modern coil cord set that is familiar to readers. Further contrasts in photo include the "Coffin" telephone of 1878, and a replica of Alexander Graham Bell's first telephone of June, 1875.

than weigh technical evidence as to proper valuations.

Small companies, he said, in some instances, still need to achieve fuller cooperation with the commission regulations on accounting procedures.

Many of the smaller companies, the speaker said, have been overly generous in charging expenditures to expenses, as distinguished from capitalizing all proper capital expenditures, with a resultant reduction in federal income taxes.

In some cases, the companies haven't seemed to realize that even if this was possible, and some reduction in such taxes obtained, they would gradually create a situation over the years where they "would materially reduce or eventually run out of a net book rate base, as an important factor in obtaining adequate rates." Under such a policy of accounting, the capital accounts would not adequately reflect the actual new and continuing investment in telephone plant, Mr. Overcash reminded the convention, and accruing depreciation would be reducing the net plant, as per books.

In conclusion, he re-emphasized:

"Unless accounting practices were proper, there would be no satisfactory income and expense figures for the determination of operating ratios . . . I can assure you there is no substitute for 100 per cent accurate accounting procedures . . . I would urge that every company, no matter how small, take whatever steps are necessary to put their house in order."

Keith Vogt, of St. Paul, Minn., secretary of the Minnesota Telephone Association, joined Mr. Overcash in the message on accounting procedures, and discussed some of the practices and problems applying particularly to smaller companies.

A "face-up" type of message, with overtones on an international theme, was delivered by Dr. Nicholas Nyaradi, director of the Institute of International Studies at Bradley University, Peoria, Ill.

Speaking on the alternatives of "Free Enterprise or Disaster," Dr. Nyaradi said businessmen must become more interested and active in politics and government in order to support and protect the American free enterprise system against one of its most insidious enemies, "galloping socialism," which, he says, is abroad in America.

He forecast economic ruin for this country, unless we support and expand our economy, retain the free enterprise system wherever it exists, and improve our educational system.

Let the businessman stand up and be counted in political affairs, challenged Nyaradi, even if the issues are controversial, so that free enterprise may endure.

On the basis of an intimate knowledge of Soviet Politburo personalities and plans (gained while Finance Minister of Hungary), supported by observations during trips to Europe in recent years, the speaker asserted that the Russian plan—for America to destroy herself from within—still stands; and that subjugation and/or destruction of the Free World is still Russia's goal.

Referring to labor's movements in the field of politics, Dr. Nyaradi observed:

"In any country of the world where labor has achieved political influence, this has led inevitably to the establishment of a more or less socialistic system. However, what our wonderful friends in American labor should know is that socialism, if once achieved, is just as dangerous, detrimental and obnoxious to labor as it is for business.

"In a socialistic economy, it is not only business which becomes one arm of the government, but labor becomes the other by playing the role of a law-enforcing agency of labor discipline.

"If once labor becomes the arm of the government, what will become of the workers right to strike, or to ask for more wages, more fringe benefits, more paid vacations, more hospitalization insurance—and what will become of the important positions of our labor leaders in such a socialized economy?"

It is appalling, he remarked, how little Americans know of the workings of their government. He asked:

"Why don't the American people know and appreciate the free enterprise system? Because we — in our American educational system—simply do not give them the necessary information. We teach, of course — and rightly so—American government and American history; but I ask you: isn't our free enterprise system just as important a part of our daily American way of life as our history or our government? . . .

"A recent survey of the National Education Association has shown that 75 per cent of our American public school teachers didn't have one single basic course in American economic principles during their own college education. How will they—these wonderful teachers—be able to teach American economics in our high schools under the heading of social sciences?"

The defense-conscious telephone conventioneers of Nebraska heard a talk

(Continued on page 39)

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RF output: 22.5 watts into 52 ohm load

Receiver: 144-174 Mc, 4-Channel
Wide Band (60kc) or Narrow Band (30kc) models available (Bands quickly converted to Narrow or Wide by substituting IF filter)

Frequency Stability: within 0.0005%

Selective Signaling: 51,000 five-digit (compatible, 2-tone sequential) codes available

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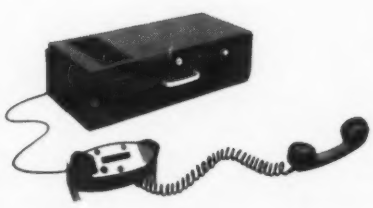
Weight: 37.25 pounds, including receiver-transmitter, control head and cable



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The Plant Man's NOTEBOOK

By RAY BLAIN, Technical Editorial Director

THERE is every indication, the writer feels, that the number of PBX systems presently in service in metropolitan areas will be considerably reduced during the next few years. There are numerous reasons for this service change.

Personal service by a PBX operator is now practically a thing of the past. Secretaries and individuals, by the use of key sets and dials, have taken over most of the personal service duties formerly handled by PBX operators. DDD eliminates the need of PBX operator assistance on toll calls. Traffic must be switched twice when a PBX is used, and switching costs money.

Various plans are currently being considered, which will not only overcome these difficulties and the expense involved, but will at the same time improve service in general.

One plan is to install a main exchange unit in a metropolitan central office building and serve several nearby PBX systems on a main line basis. Another plan is to install a main exchange unit in rented quarters in an office building and serve all PBX systems in that and nearby buildings on a main line basis.

Either of these arrangements would provide full mechanization, inward dialing, and DDD with automatic number identification for each individual extension. Moreover, it would serve as both the PBX and the local central office and eliminate one switch on all incoming and outgoing calls. The service in general should be improved by this arrangement, and the over-all cost should not be increased.

•

According to *Long Lines* (publication of AT&T), New Yorkers will soon be able to pick up their telephones and, in emergencies, obtain the latest facts. By dialing a special number, they can obtain helpful information during hurricanes, traffic jams or other special conditions.

When there is no emergency, the round-the-clock program probably will give facts on train and airline schedules, or other information of public interest.

Scheduled to go into effect in July, the municipal radio station WNYC will act as an information gathering agency, transmitting news of all emergencies, or unusual conditions to the New York Telephone Co.

•

In the old days, linemen carried insulators, hardware and other small items to the top of the pole in the bib of their overalls. This was a very unsatisfactory practice, as items were frequently dropped which caused another trip down and then up the pole again.

This problem has been solved for the modern lineman in the design of a pouch that attaches to the belt. This pouch holds the necessary parts and permits carrying them safely up the pole. We wonder why someone didn't think of this idea in the old days?

•

Our long-time friend, Bruce Quisenberry, director of public relations for Automatic Electric Co., furnished us a copy of a letter he received from N. F. Pullen, director of public relations for the British Columbia Telephone Co. of Vancouver, Canada.

The letter states that the company intends to build a 12½-mile pole line between Miocene and Horsefly. Mr. Pullen agrees that this will be of no special interest to the world, and certainly not to TELEPHONY, but that it is pleasant to know that they are building a line between two places with such interesting names. In this, we concur.

•

The writer recently flew from Washington, D. C., to Nashville on Braniff Airlines and spent three nights at the Capital Park Inn. This is a new and modern motel located in the heart of the city and near the state office buildings and Capitol. The telephone service is also modern and up-to-date. A red light on the desk set indicates that a call is being held for the visitor at the office. The dial carries special markings. Guests dial "8" to make a long distance call and "9" for local calls. They dial "0" for the motel operator. This, obviously, is excellent telephone service.

We also noted that Nashville has a fire and emergency telephone reporting system. These telephones, located on yellow standards at fixed intervals along the street, are properly identified and carry suitable signs to indicate how they are to be used.

It is quite apparent that all cities—and even the majority of villages—will eventually be provided with these telephone systems, which prove indispensable during any emergency.

•

In a recent USITA member letter, Leon F. Roberts, director of information, cited the fact that there are still 3,194 magneto telephone exchanges in the United States. Of these, 2,479 are served by Independent companies and 715 by the Bell System.

•

For many years past, switchboard cable was carefully laced to iron racks between the various equipment bays of a central office. In most cases, this was a thing of beauty and not a single stitch would be crossed. This was not so bad in the old days of cheap labor; but this method is extremely costly in these days of high prices.

To reduce the present-day labor costs, cable troughs of various types have been used to carry cable between equipment bays. The cable is merely laid in

for the right number in line and drop wire insulation...

Monsanto Polyethylene compounds MPE 12 and MPE 11302 help make line and drop wire insulation economical to use and maintain because they impart superior weather-aging characteristics, good abrasion resistance, and resistance to fatigue, insuring long service life. MPE 12 and MPE 11302 contribute to excellent appearance—smooth surface, good gloss, and excellent carbon black dispersion.

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Monsanto Polyethylene formulations are based on long experience in supplying the specialized needs of the Wire and Cable Industry. MPE 12 and MPE 11302 are but two in Monsanto's range of polyethylene resins developed for wire insulation. For more information, write to Monsanto Chemical Company, Plastics Division, Room 827, Springfield 2, Mass.

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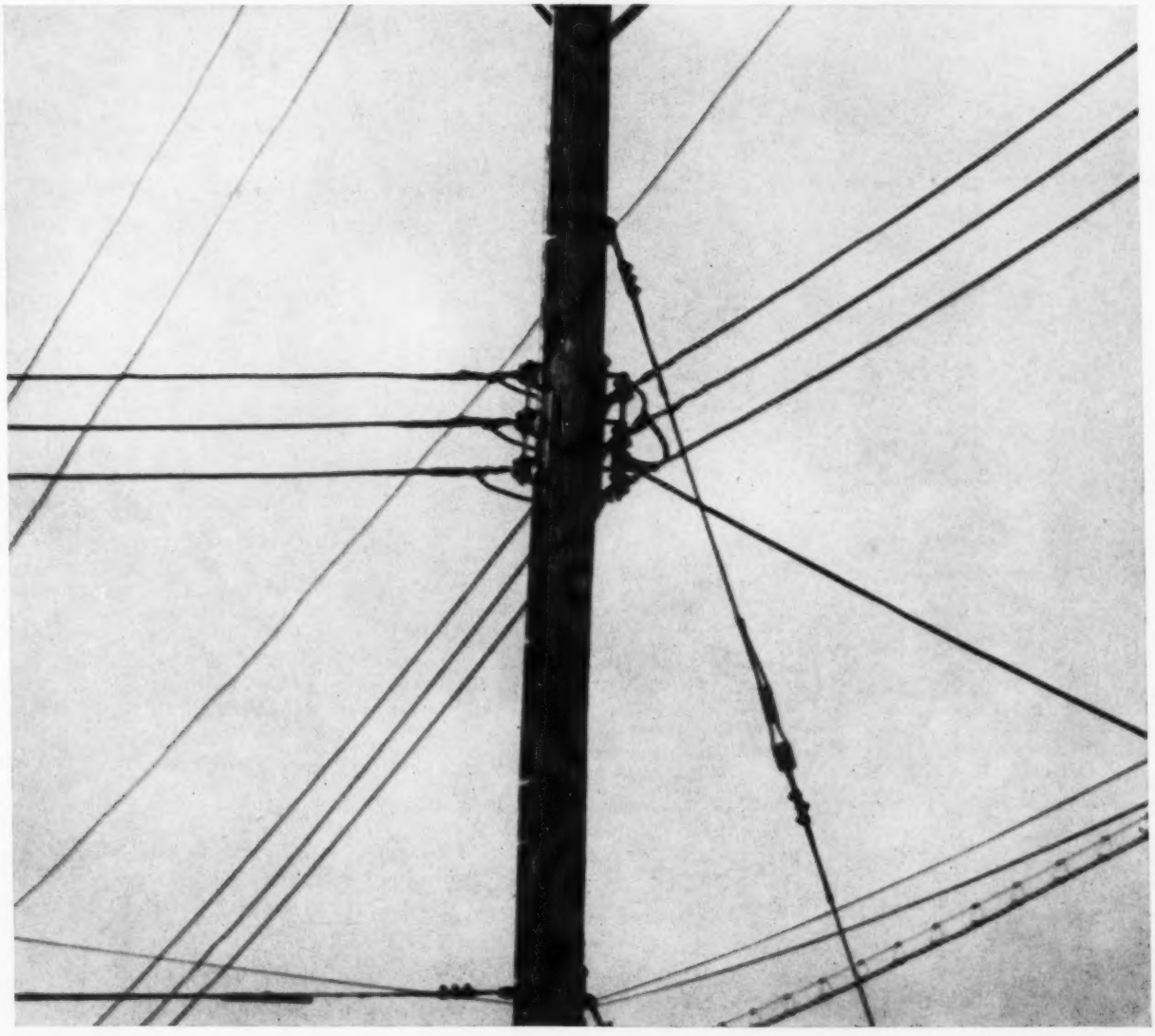

the troughs and lacing is not required. These troughs can be of sheet metal, or in some cases, of expanded metal, to prevent dust accumulation.

We visited a job recently where a new dial installation was in progress and learned they were using a new type cable trough. The conventional cable rack was turned upside down and a sheet of metal placed on the cross-members for its full length. Strap iron standards about 8 inches in length were welded to each side at about 2-foot intervals. Cables were merely laid in this trough arrangement. The outer layer on each side could be laced to the standards, if considered desirable; or the entire cable run could be clamped in place. This appears to be a very good arrangement and certainly a labor-saver.

•

North American Philips Co., Inc., will furnish high-speed and low-speed communications equipment that will be used in a 12,000-mile leased flight reservation network for United Air Lines. This equipment will be installed at approximately 150 locations and will link 800 ticket-agent sets to a data processing center in Denver, Colo.

This system, furnished and installed by Teleregister Corp., will provide each United Air Lines agent with round-the-clock access to the Denver center. The average response time to agent inquiries will be one-and-a-half seconds. The system will handle up to 15 messages per second . . . 54,000 per hour.

The high-speed equipment will operate on two full duplex loops of telephone-quality leased lines. Each station on the loop will have the ability to introduce its own traffic and extract its own replies. Intensive error checking will be performed, with originating equipment notified of any error and told to send a new message.

Each station will also be able automatically to change its direction of operation on high speed loops, and to transfer some of its functions to other modes, when so instructed from Denver. This feature permits continuous network operation, in spite of partial line failure or station outage.

•

"Cross Talk"

Tact is defined as knowing how far you can go too far.

•

We are warned that anyone who thinks his business is good simply hasn't read the figures from Washington.

•

It is said that in the history of the world, there have always been 10 years of war to every one of peace.

Plant Man's QUIZ

By RAY BLAIN, Technical Editorial Director

Q. Can you advise us whether plastic rope is considered safe and suitable for use on heavy telephone construction?

A. We are informed that plastic or synthetic rope is proving entirely satisfactory for this purpose. It has great strength and is actually about 70 to 80 per cent stronger than Manila. It also weighs about 1/3 less than Manila. It is waterproof, won't mildew, is highly resistant to acids, alkalies and most solvents. It handles splices like Manila, and holds knots well. It will not weaken with age and any loss of strength can be detected by a visual inspection.

It is available in sizes from 3/16-inch through 2 inches.

•

Q. We'd like to know what method is recommended for the installation of pressure plugs in working cables?

A. Perhaps the most convenient method and one that has proved satisfactory is the injection of epoxy resin by using a special injection gun.

A hole is drilled in the cable and a fitting installed for attaching the injection gun. The compound can be obtained in cartridge form. One compound is available for use on plastic cable and another for paper-insulated lead-covered.

•

Q. Will you please advise us as to where we may obtain information concerning Citizens Band Radio?

A. We suggest that you obtain a copy of a 160-page, soft-cover book titled: "Citizens Band Radio" by Allen Lytel. This book may be purchased from TELEPHONY for $3.90.

This book was written for the user, the prospective buyer, and the service technician who repairs Citizens Band radio equipment. For those new in the field, early chapters describe its historical development, applications, classifications, and types of equipment available.

Design features of different types of transmitting and receiving equipment are compared, and specific models are analyzed in detail. Particular emphasis is placed on single-channel and multi-channel transceivers and receivers.

Specific attention is given to portable units, kits, standard transceivers, antenna, and power supplies. The installation and repair of citizens band equipment receive special consideration.

A particular feature of this book is the discussion of the FCC Rules and Regulations important to the Citizens Band user.

•

Q. What are the largest sizes of plastic cables manufactured at this time with plastic-insulated conductors?

A. We have information from two different companies that manufacture cable up to 600-pair 22-gauge and 900-pair 24 and 26-gauge with plastic-insulated conductors.

If larger sizes are manufactured in these types at this time we have not been so advised.

•

Q. Can you suggest a good book on semiconductors and transistors for use of a telephone engineer?

A. One very good book on this subject, "Semiconductors and Transistors," can be purchased from TELEPHONY for $2.90. This is a 144-page book in a soft cover. It discusses and evaluates the theory and characteristics of semiconductors and transistors. Specific attention is given to atomic structure, the quantum theory, conductors, insulators, and semiconductors.

Conduction by holes, semiconductors with impurities, and the semiconductor rectifier are analyzed.

The p-n junction, under equilibrium conditions, and in reverse and forward bias, diode tubes (including photodiodes), and an extension of p-n junction theory into the transistor, receive specific attention.

Considerable attention is also given to basic design procedures in transistor amplifiers. Through these and other detailed topics, a foundation is provided upon which more advanced concepts can be built.

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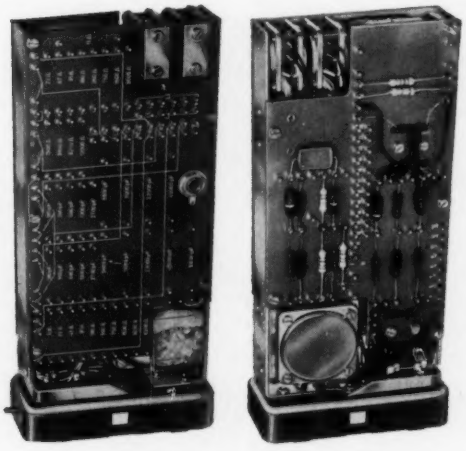

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The industrial plant, on the other hand, needs a complete communications system to handle a large volume of incoming, outgoing and internal traffic. This factory needs a PABX system with many auxiliary services. AE gives you stock delivery on six PABX boards.

For details on our complete line of business phones, PABX and PBX boards and key systems, see your AE representative. He can also furnish you with valuable sales aids to help you promote business communications equipment. To contact him, just write Automatic Electric Sales Corporation, Northlake, Illinois.

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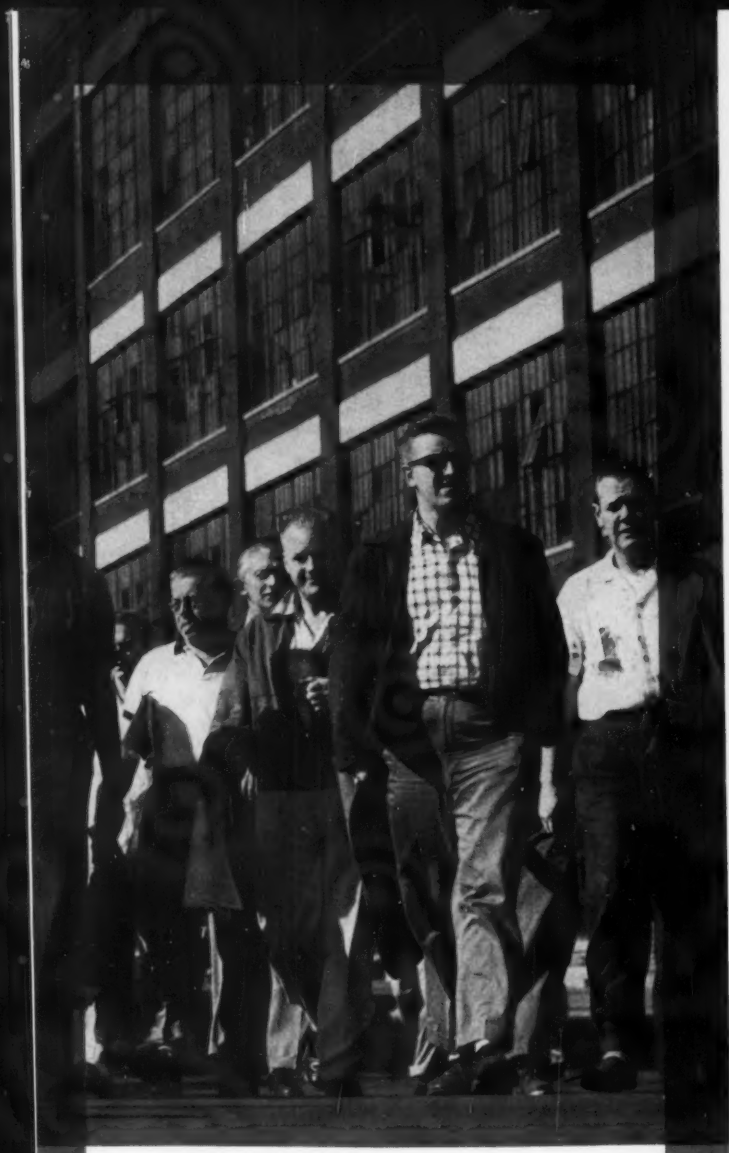
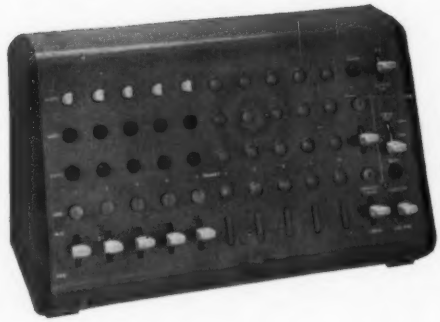




TYPE 75 PABX A complete communications system. Designed to serve up to 200 lines. Can be expanded for greater capacity. Desk-type attendant cabinet (shown here) or floor-type attendant cabinet.

TYPE 85-C PHONE For two-line pickup, signaling and extension exclusion. Ideal for retail store, receptionist or small office. Simple turn button switches from one line to another. Choice of colors.

THE Operator's Corner

By MAYME WORKMAN — TRAFFIC EDITOR

CHRISTMAS HAS BEEN over for a long time, but this true story of a star which shone on Star City, Ark., will probably never be forgotten by two families who live in the town.

When we think of Stromberg-Carlson, we think of switchboards, but the name, "Stromberg-Carlson," stands for something entirely different in the memory of two families in Star City—to them it stands for *turkeys*. They began associating turkeys with S-C as of last Christmas.

For them, the 25th of December might have been "just another day" torn off the calendar; a little farther from birth, a little nearer the end. What's the difference when the cards are stacked against you?

Christmas! Yes, they knew what it meant—for other people. A big dinner, presents, toys for the kids. It used to make sense to them, too, when the preacher said: "We give to others because such a great gift has been given to us." They had jobs then. But now . . . was this Christmas idea really meant for everybody?

Two young men then in Star City thought Christmas was for everyone. They were strangers in town, with no thought of staying long. They were Stromberg-Carlson employes, just there to install the dial equipment, see that the new telephone service worked properly, and go on to the next job.

Perhaps, they found something here in the Arkansas town that was a little warmer than other places; possibly the buoyancy of Kay Adair, the telephone company president, had its effects. Whatever the stimulus, the men's idea was their own.

Guy Pinckley and Jim Smith had been as delighted as all other Stromberg-Carlson employes when they received news that a turkey would be the company's Christmas gift to them. But two large turkeys for two lone bachelors seemed incongruous to them as Dec. 25 approached.

They began to think:

"There must be lots of people . . ."

"I know what you're thinking. Now, Mrs. Adair will know . . ."

"Great, and of course we'll get the usual fixings."

"Say, Jim, let's make it really Christmas—you know, they might have kids, and that means stockings . . ."

And a Christmas party it was—rather, *two* parties. Each celebration began with bulging stockings for all the children, then a gift to last—new shoes that pinched a bit on swollen feet. When dinner was ready, the two fathers—scrubbed and beaming—took the honored spot at the heads of their own tables.

As for Guy and Jim, the Stromberg men, in one's own words: "Santa hasn't been caught in all these years; why spoil his record?"

That evening, a little child stood by the window at bedtime. Then, looking up at her Mother, whispered what they both knew: "Tonight the stars are so much brighter"—in Star City.

If Guy and Jim should chance to read this account of the happiness they brought to two families in Star City last Christmas, it should give them a warm glow to remember again, as they probably know, "It is more blessed to give than to receive."

No doubt, there are many Guys and Jims in America at Christmas time, but not so many who are fortunate to have a turkey or two at their disposal, around which they can build a real Christmas for less fortunate Americans.

Much credit is also due Loretta Fish, office manager at Star City, who helped select the families and went shopping with the boys to buy shoes for the children; they took them to the store so they would be fitted properly. When the clerk discovered what they were doing, he let them have the shoes at half price. And so the Christmas Spirit spread!

Telephone folk have always been noted for their generosity, and Guy and Jim lived up to this tradition. May we never lose our desire to make life a little happier for those who are less fortunate.

Traffic Questions

(1) Will customers subscribing to Wide Area Telephone Service (WATS) have access to DDD service, and dial most of their own calls?

(2) Are all WATS calls handled by operators, whether from full-time or measured-time access lines, to be ticketed?

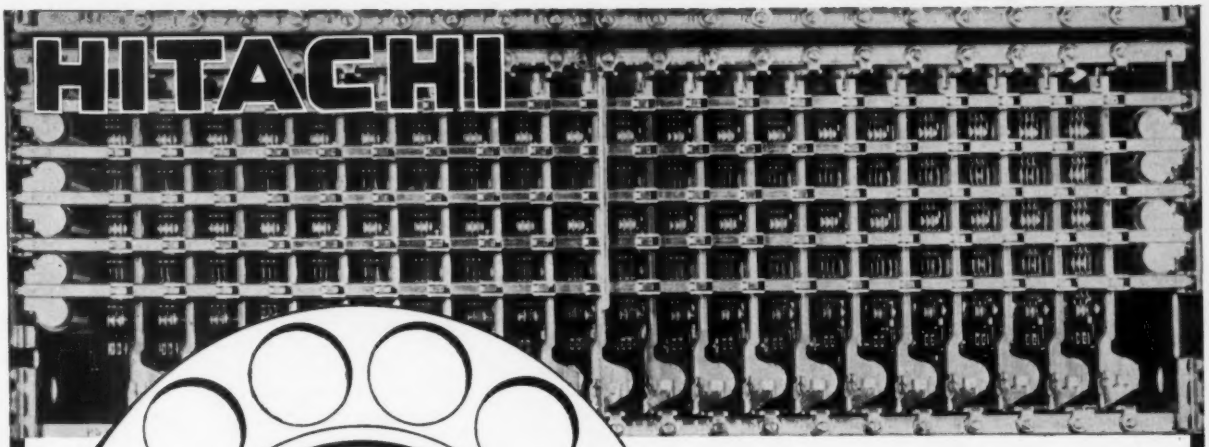
(3) When an operator receives a call over a WATS trunk, how should she answer?

(4) In a non-mark-sense office, are the call details written in the usual way?

(5) How should the operator proceed when a delay is encountered on a WATS call?

Answers to questions are on page 45.

HITACHI



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Today's telephone communications authorities are now employing the Crossbar System Automatic Telephone Switchboards in addition to the time-proven "step-by-step" Strowger System. They are finding that the Crossbar System offers many advanced facilities, fewer maintenance problems, minimized failures and longer service life, and that these features are making it ideal for unattended operations. Hitachi has devoted particular attention to the development of the Crossbar System, and consignees continue to report gratifying operating results.

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Courts and Commissions

Company Appeals PUC Rate Decision to Ohio High Court

The Citizens Telephone Co. of Rock Creek has appealed to the Ohio Supreme Court an order of the Ohio Public Utilities Commission, it was reported on May 16 (TELEPHONY, Apr. 15).

The company charges that the commission's rate increase order, which was effective Apr. 1, was "erroneous, unlawful and unreasonable."

The commission had investigated the Citizens company's original estimates, concluded they were too high, and asked the company to file a revision.

It was these revised rates which were approved by the commission.

Bell Files Proposal For WATS in Illinois

A new telephone service, providing wide area intrastate long distance calling, was proposed on May 24 by Illinois Bell Telephone Co. in a filing with the Illinois Commerce Commission.

Called WATS (Wide Area Telephone Service), it is being offered on a full-time or measured-time basis. The proposal parallels an interstate service inaugurated earlier this year by the American Telephone & Telegraph Co.

OK Ill. Bond Issues

The Illinois Commerce Commission on May 23 approved the petitions of two companies to issue bonds. The Palestine Telephone Co. was allowed to issue $303,000 in first mortgage bonds and the Inland Telephone Co. was granted permission to issue $222,000 in first mortgage bonds (TELEPHONY, Mar. 25).

Buy Stock in N. Y. Company

Charles T. Keae Jr., Binghamton, N. Y., secretary of the Hawleyton Telephone Co., has announced that H. Russell Cammer, president of Western Counties Telephone Corp., New York, has purchased controlling stock in the Hawleyton company.

Ask Increase in Wisconsin

The Wisconsin Public Service Commission on June 1 was to have heard the application of the Milltown Mutual Telephone Co. for authority to increase its rates.

Neb. Legislature Passes Bill Approving Current Value

The Nebraska legislature on May 18 unanimously passed a bill, LB 507, providing that the Nebraska Railway Commission shall give consideration to current value in determining the valuation of property for rate base purposes (TELEPHONY, Apr. 15).

The bill provides also that when two or more companies jointly furnish service, the revenues shall be divided in a manner mutually agreed upon between the companies.

The previous statute provided that long distance rates within Nebraska were based on air line mileage between points, and at least 15 per cent went to the company where the call originated, and 10 per cent to the company where the call terminated, with the remainder divided pro rata on a line-haul basis.

The full text of the new bill is as follows:

"All rates for local telephone service, and for intrastate long distance telephone service shall be prescribed by the state railway commission.

"In determining the valuation of telephone property for the purpose of fixing fair and reasonable rates, the commission shall give consideration to the current value of such property determined in the manner provided in section 75-805, and shall give such consideration to any other factors as may be just and proper.

"Where two or more telephone companies jointly furnish such local or long distance service, the revenues from such jointly-furnished service shall be divided in such manner as may be agreed upon between the companies furnishing such service.

"In the event of inability to agree, any one of the companies jointly furnishing such local or long distance service may file an application with the state railway commission requesting that the commission enter an order prescribing an equitable division of revenues from such jointly-furnished service.

"The order entered pursuant to such application may be appealed from by any party to the proceeding in the same manner as from other orders of the state railway commission."

New Law Changes Appeals Procedure of Me. High Court

Maine's Governor Reed has signed into law, a bill which limits slightly the role of the state supreme court in hearing appeals from Maine Public Utility Commission decrees in utility rate cases.

Under the new law, the court will be empowered to order the commission to obtain additional evidence on certain points. However, the law will remove the court's authority to receive and act on new or additional evidence on its own motion, except on issues of confiscation or constitutional right.

Retailers Use Telephone For Credit Check, to Page Clerk

Two ways to provide retail merchant subscribers with better telephone service recently have come to our attention.

In Poughkeepsie, N. Y.'s Luckey Platt department store, New York (Bell) Telephone Co. has modernized the store's internal communications system by replacing pneumatic tubes with speakerphones.

Al Schmaltz, of the sales department of Luckey Platt, reports that credit references now take only 30 seconds to check, as compared to the five minutes customers usually had to wait under the obsolete tube system.

Clerks now dial one digit to reach the credit department, where operators have the information at their fingertips. Previously, clerks had to fill out forms and dispatch them through the pneumatic tubes.

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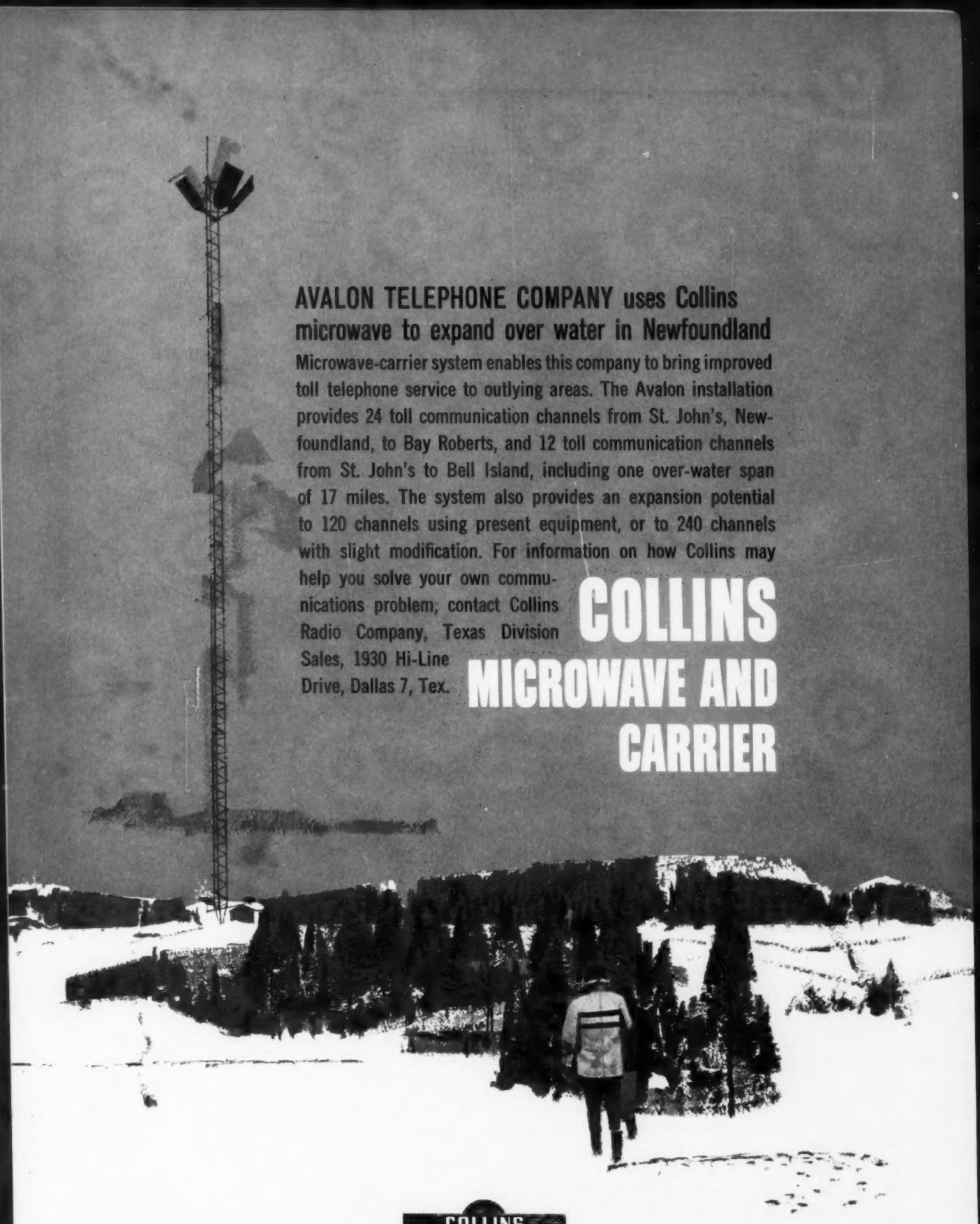
In another department store, on the furniture floor, the retailer reasoned that shoppers examining model rooms would rather not be approached by a salesman until ready. Therefore, telephones were placed in the model rooms. When a shopper wants sales help, she picks up the telephone.

OK Minn. Stock Transfer

The Minnesota Railroad & Warehouse Commission on May 22 approved the transfer of all the outstanding stock of the Anoka County Telephone Co., Bethel, owned by the Utility Services Co. and the Independent Equity



AVALON TELEPHONE COMPANY uses Collins microwave to expand over water in Newfoundland

Microwave-carrier system enables this company to bring improved toll telephone service to outlying areas. The Avalon installation provides 24 toll communication channels from St. John's, Newfoundland, to Bay Roberts, and 12 toll communication channels from St. John's to Bell Island, including one over-water span of 17 miles. The system also provides an expansion potential to 120 channels using present equipment, or to 240 channels with slight modification. For information on how Collins may help you solve your own communications problem, contact Collins Radio Company, Texas Division Sales, 1930 Hi-Line Drive, Dallas 7, Tex.

COLLINS MICROWAVE AND CARRIER

COLLINS

COLLINS RADIO COMPANY • DALLAS, TEXAS • CEDAR RAPIDS, IOWA • BURBANK, CALIFORNIA

Corp., to the Mille Lacs Telephone Co., Onamia.

NASA Selects RCA to Construct Relay Satellite

The National Aeronautics & Space Administration announced on May 18 that Radio Corp. of America has been selected for contract negotiations to construct the Relay experimental communication satellite to test the feasibility of transoceanic telephone, telegraph, and television communications using an active repeater satellite.

The Goddard Space Flight Center, NASA's installation having responsibility for communication satellite programs, will negotiate and manage the contract, which will amount to approximately 3.25 million dollars.

The RCA proposal was selected from seven proposals submitted to the Goddard Center.

Relay is the first active satellite in NASA's research and development program to explore the technology of global communication satellite systems. It differs from Project Echo and follow-on developments in the passive satellite field, in that the spacecraft will contain electronic equipment to receive and retransmit radio signals between the United States and overseas points.

Under agreements approved by the respective countries, communications organizations in other countries will participate with NASA in the Relay experiments. To date, as previously announced, the British General Post Office and the French Center for Telecommunications Studies have agreed to provide ground stations in Europe for transmission of multi-channel telephone, telegraph, and television signals in connection with Project Relay.

The Relay satellite will weigh about 100 pounds, and will be placed in an orbit extending outward to about 3000 miles. A Delta launch vehicle will be used.

The spacecraft will contain instruments to detect radiation damage and other environmental effects on critical components as well as the communications equipment. It will be launched from Cape Canaveral.

W. Germany Offers Funds for Transatlantic Space System

A contribution of from 3 million to 5 million dollars has been offered by West Germany towards the start of a transatlantic space communications system, it is reported.

Radio calls would be relayed through satellites stationed 6 miles up in space, under plans being worked out by representatives from the United States, Britain, France and West Germany.

Seymour B. Weinberg, Bell Telephone Laboratories engineer, "listens in" on the sightless switchboard which was exhibited for the first time at the National Braille Club convention in Chicago. Weinberg developed the switchboard. Blind operators can plug in calls by hearing tones.

Bell Device Enables Blind Operators to Hear Calls

Bell Telephone Laboratories has developed an improved experimental switchboard attachment for sightless telephone switchboard operators.

Called a "seeing aid," the device enables blind operators to "see" the switchboard with their ears instead of their eyes. A prototype model of the attachment was exhibited for the first time at the National Braille Club convention in Chicago the week of May 8. Bell engineers hope to have it in production by late 1961.

The device was brought to Chicago by Bell Telephone Laboratories and the Telephone Pioneers of America, the organization of Bell company employes with 21 or more years' service. Pioneers serve the sightless in many ways throughout the nation.

The "seeing aid," which can be installed on most private switchboards, enables sightless operators to work beside those who have normal sight. A sighted operator plugs jacks into the board under openings where lamps are lit. A blind operator runs a reel-type electronic probe along rows of openings. When a probe comes to a lighted lamp, indicating a call is to be handled, the operator hears a tone signal in her earphones and plugs in the call.

This is accomplished with the help of a special small jack strip mounted on the face of the switchboard, and a small box containing a phototransistor.

Earlier switchboards designed for sightless operators used openings with Braille markings. The new model is the first to use audio signals in the operators' earphones.

Bell of Canada Announces Executive Personnel Changes

T. W. Eadie, president of The Bell Telephone Co. of Canada, announced on May 16 that J. R. Logan, vice president and treasurer, becomes vice president; and R. C. Scrivener, director of business development, becomes vice president, finance, both effective July 1.

Mr. Logan joined the company in 1909 in the treasury department. In his new position, he will assist the president in a consultative capacity in the organization of financial work.

Mr. Scrivener succeeds R. H. Keefler who becomes president of the Northern Electric Co. on July 1.

Mr. Scrivener joined Bell Telephone in 1937 on his graduation from the University of Toronto. He held a number of administrative positions in the operating departments and staff groups of the company until his appointment as director of business development in February, 1960.

W. C. Macpherson succeeds Mr. Scrivener as director of business development. Born at Prescott, Ont., he has worked in many communities in Ontario and Quebec and is well-known in North Bay, where he was district manager from 1945 to 1951.

W. C. Corbett, assistant treasurer-administration, becomes treasurer, also effective July 1. Mr. Corbett has held his present position with the company since 1945.

NEBRASKA STATES GOALS

Concluded from page 26

by Maj. Gen. Lyle Welch of Lincoln on "Nebraskans' Defense Capabilities." General Welch also presented a film entitled "Radiology Defense."

The final presentation of the convention program touched on another area of telephone company contacts with the state, that of the department of roads. "Nebraska Highways and the Telephone Industry" was the title of this address delivered by O. L. Polk, utilities engineer, Nebraska Department of Roads. Ed Oldfield, also an engineer of that department, joined Mr. Polk in presenting official views.

After a brief review of matters of mutual concern, both to the telephone industry and the state department of roads, they made themselves available for a question-and-answer session.

Nebraska Telephone Pioneers had a special historic exhibit of telephones of interest to both veterans and younger members of the industry, and also featured a special hobby show. Gay Henderson of the Frank H. Woods Chapter of ITPA, presided at the annual luncheon. Co-chairman for this occasion was John W. Jacobson of the Casper E. Yost Chapter of the ITPA.

The convention elected as directors to serve until 1964: Thomas Eason of North Bend; William Perritt of Hyannis; Tyler Ryan of Lincoln; and Jay Orr of Columbus.

Re-elected to the board were: LeRoy Sieckmeyer of Blair; Clifford Thompson of Dunning; J. E. Nelson of Lincoln; Ben Wagner of Blue Hill; John Ahlstrand of Omaha; Pat Carey of Petersburg; Harold Lang of Custer, S. D.; J. L. Antrim of Scottsbluff; and Jack Dwyer of Hartington.

The board elected the following officers: President, Mr. Sieckmeyer; vice president, Mr. Thompson; and secretary-treasurer, J. Earl Nelson of Lincoln.

Bell Adds Overseas Points

Two new overseas points can now be reached through Bell System international radio-telephone service. They are Papeete, Tahiti and Belize in British Honduras.

Expansion in Ecuador

A 1.8-million-dollar contract for establishing 1,000-line telephone exchanges in Babahoyo, Quevedo and Playas, Ecuador has been signed between Empresa de Telefonos Automaticos de Guayaquil and the L. M. Ericsson Telefon A. B. of Sweden.

KLEIN PREFERRED BY ELECTRICIANS AND INSTALLERS

If you know Klein for pliers, climbers, grips and other tools, you will be interested in the many other products in the complete Klein line, such as those illustrated.

In leather goods, Klein has been supplying the largest utilities for years with tool belts, safety straps, tool pockets and other equipment designed for maximum safety . . . longest life.

Klein knives and scissors are specially designed for electricians and built to stand hard usage.

5127 LEATHER POUCH
5227 WEB BELTING BELT
5129 FLASHLIGHT POUCH
2100-5 "XELA" ELECTRICIAN'S SCISSORS
5100 LEATHER SCISSORS POUCH
252-6-SW OBLIQUE PLIER WITH "W" STRIPPING NOTCH
301-6 LONG NOSE PLIER
1550-5 "XELA" SKINNING KNIFE

FREE BULLETIN: Write for 103TG Tool Guide covering the complete Klein line.

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BILL FORMS FOR COMPUTERS

Concluded from page 20

Beach office, where our Revenue Accounting Department is located.

Ten Million Calls

Revenue Accounting is responsible both for originating the accounting media for customer billing and for the distribution and collection of statements. The data processing section has installed and maintained a plant capable of computing charges and printing bills for an operation which handles in excess of 10 million telephone calls per month. We think it is worth noting that this data processing operation is carried out almost entirely by established company employes; that is, almost all the personnel who work on our computer system were recruited from within General of California and trained at local IBM facilities.

We handle billing operations in 15 cycles with each cycle made up of approximately an equal number of subscriber accounts. When a new telephone is installed, the Revenue Accounting Department keypunches a card with identification information and the initial service charge. Similar cards are punched for the monthly service charge, classified directory advertising fees, extension, or additional service charges.

Toll Billing Cards

Detail cards for billing long distance calls are created daily in several ways:

(1) For Direct Distance Dialing toll calls, punched paper tapes created by the automatic toll ticketing equipment in our individual exchanges are sent to Long Beach and run through tape-to-card converters.

(2) The majority of our non-dialed long distance calls are keypunched at Long Beach from toll tickets recorded by the toll operators.

(3) A second method for handling non-dialed long distance calls, which we have just started at General Telephone, is a mark-sensing operation. The operator records the billing information for a call on a specially designed IBM card. Through a machine process, the information marked by the operator is sensed and actually punched into the same card automatically. Although the volume of calls handled through our mark sense operation is now small, by the end of 1961 this will be our major means of handling other than Direct Distance Dialing calls.

Continual Updated Record

In all cases, batch control figures for all the cards to be processed are developed and sent along with the cards to the data processing center. The cards generated by the Long Beach office are brought over frequently during the business day. The same service also takes the bills created in the Data Processing Department back to Long Beach.

At Santa Monica, we use these cards to keep a continually updated record of our accounts receivable status. The information on the punched cards is quickly converted to magnetic tape. These daily tapes are run through the computer, along with tapes which accumulate billing data for the current month. In this way, our accounting records for our entire system are always maintained in a current status.

Summary on Tape

When the billing date for a given cycle arrives, all of the information required to properly bill a subscriber must be brought together. For a billing cycle of 55,000 subscribers this would include the master history record for 55,000 accounts, 55,000 cash payments made on last month's bill, information to bill approximately 700,000 toll calls, and information showing approximately 5,000 changes made in the status of the accounts being billed. Once the bill is prepared on the computer, the billing tapes are then transferred to the 720-A printers.

As a by-product of the billing operation, we create a tape which accumulates the statistics needed to summarize our operations for both our own management and for government regulating agencies. These reports are also printed out by the high-speed printers on Kant-Slip forms.

Some idea of the productivity of this operation can be seen in the fact that our billing operation consumes an estimated 215 miles of paper and 107.5 miles of carbon paper each month. Our correlative reports utilize some 10 miles of paper and 4.5 miles of carbon paper.

For each telephone bill, we create an original and one carbon copy. The original copy of the bill is sent to the Revenue Accounting office, from which the bills are mailed to subscribers. The duplicate copy of the bill is sent to the telephone company business office to furnish our customer representative an exact copy of the bill mailed to the subscriber. Most subscribers elect to mail in checks covering their telephone bills directly to Long Beach, using the return envelope included with the bill. In cases where payments are made in the local business offices, a copy of each bill stub is placed on a ring for transmission to Long Beach.

At the present time, our Long Beach office keypunches cards incorporating information on paid bills. These are forwarded to Santa Monica along with other current billing information. The payment data is also converted to magnetic tapes and used to update the customer's account record on a daily basis.

Actually, we are just beginning to reap the benefits sown by the supplementary reports made possible by our electronic billing and modern forms. We have learned that they can help us do a bigger job faster.

While there is no appreciable difference in the number of people working at our billing office now as compared to before we installed EDP equipment, we would almost certainly have had to make major staff additions and construct or rent new quarters to house our billing operations if we had not made the conversion.

Fringe benefits of our new forms have given us statistics for all billing and payment figures. These statistics give management a tremendous advantage in planning for the future, as we constantly must do.

The increased automation and single bill, of course, have decreased opportunities for human error, and therefore have increased our billing and bookkeeping accuracy.

Most important in our eyes, however, is the end product. Our customer now gets a single monthly bill that clearly lists and explains all charges in a vertical format which is easily understandable.

It is convenient for him to detach the perforated stub and send it back with his payment, with full knowledge that his payment will be recorded properly.

EDP equipment and standardized form paper have made it possible for us to better satisfy our customers while handling a greater volume of work with increased efficiency and economy.

Profits and Growth

"Occasionally we read of certain people criticizing corporations because they have had a profitable year. They take the attitude that it is almost sinful to make a profit. . . .

"It is from these profits that money comes for further growth and expansion of the business, providing additional job opportunities.

"It is also from profits that stockholders receive dividends for the use of their money which they have invested to finance the business."—WILLIAM PARK, chairman of the board, American Stores.

No Lost Time Accidents Since '54; Minn. Company Honored

One of the nation's most enviable small plant safety records is improving daily as employes of the East Ottertail Telephone Co. of Perham, Minn., carefully attend to their business without lost-time accident.

The company has not lost a man-hour of work through on-the-job accident since Sept. 1, 1954, and has accumulated a total of more than half a million man-hours worked during this period.

In recent ceremonies at Perham, company president Royale B. Arvig accepted a citation from Employers Mutuals of Wausau in behalf of his 40 employes.

Mr. Arvig's company has 5,000 subscribers in 50 townships, which reflects a growth of more than 1,300 per cent since Mr. Arvig assumed active direction 10 years ago. East Ottertail was among the first companies in the Northwest to bury cable and today has about 1,000 miles of buried telephone plant.

Royale B. Arvig, left, president of East Ottertail (Minn.) Telephone Co., accepts safety plaque from V. L. Rushfeldt, Minneapolis safety engineer for Employers Mutuals of Wausau.

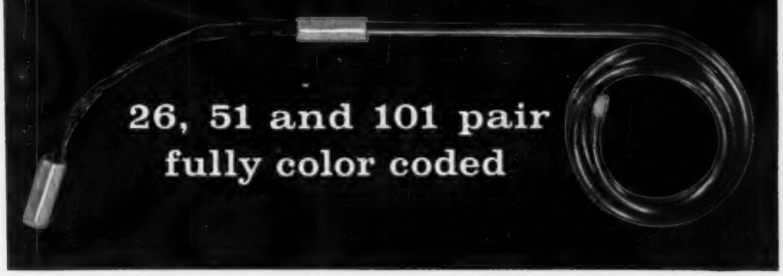
Arvig's family has been in the telephone business for 50 years. He credits his company's outstanding safety record to the emphasis on safety included in employe training programs. Employers Mutuals cites the East Ottertail company's safety performance as an example of how management interest in safety, properly trained employes, and excellent equipment will combine to produce excellent results.

Evolution of Liberty

"This liberty to discover and pursue a natural happiness, this liberty to grow wise and live in friendship with the gods and with one another, was the liberty vindicated at Thermopylae by martyrdom and at Salamis by victory."—GEORGE SANTAYANA.

MD

CABLE STUBS



26, 51 and 101 pair
fully color coded

The MD Cable Stub is a section of lead sheathed, polyvinyl chloride insulated 24 AWG cable with a pressure plug (gas dam), factory installed at the end of the sheath. Each stub is factory tested to insure that it is gas tight before shipment.

FOUR PRIMARY USES OF THE MD CABLE STUB

1. Permits the use of Ready Access type terminals on paper and pulp insulated cables.
2. Simplifies splicing of paper and pulp insulated cable to plastic insulated conductor (PIC) cable.
3. Makes possible the use of Ready Access type loading on paper and pulp insulated cable.
4. Makes "tipping out" of paper insulated cable easier.

Installation Specification No. 109 describes installation procedures for MD Cable Stubs.
Send for yours today.

Reliable

ELECTRIC COMPANY
Franklin Park, Illinois

A Symbol of Integrity Since 1909

News on New Products

MOTORIZED MICROFILM READER—The Starlet, a motorized film reader, has been developed by Recordak Corp. for viewing microfilm images.

Van B. Phillips, vice president, sales & advertising, commented that "The introduction of the Recordak Starlet marks new advances in simplicity and operator efficiency . . . Access to any desired record-on-film, . . . reduced operator effort and search time are afforded by the motorization feature . . ."

The Starlet, according to the company, accepts the 16 mm. microfilm contained in the Recordak film magazines; or, with a simple adapter, it can accept microfilm spooled on conventional reels. This adaptability, plus its light weight (32 pounds), permit quick and easy retrieval of records, the company explains.

In fact, Recordak adds, its new microfilm reader is designed for applications in which retrieval speed and frequent lookup are consistent requirements. It states that with its film magazine concept and Kodamatic indexing, the Starlet can reduce retrieval from minutes to seconds. Its value is observable as it speeds access to billing records, catalogs, directories, credit records, parts lists, etc.

There are two models of the Starlet available — the one for office, the other for mobile installations. Request NP1636.

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TELEPHONE INSTALLERS' TRUCK BODY—York Body & Equipment Co. has announced the availability of its new Model YU-77 telephone installers' truck body, which can be mounted on either ½ or ¾-ton chassis with 40-inch to 48-inch cab-to-axle dimension.

This body, which York says is engineered to save installers time and for more convenience and safety, is made of galvanneal steel for corrosion resistance.

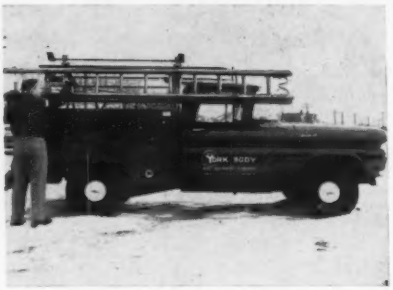
Able to carry approximately 40 telephone sets—plus material and tools—the body can be mounted at the York plant or will be shipped, crated, to the purchaser.

Some features included are a box for pruning or docking saw and handsaw, first aid box (on door), drop wire reel on sliding shelf, slide out tray for test instruments and miscellaneous equipment, spare tire and rubber goods compartment on left-side of vehicle, tool and material card and holder, oil can holder and bit rack.

Ladder takeoff is from side allowing tight rear-end parking in business districts. York says that ladder brackets can be mounted on curb or street side.

Doors have double pan construction with stainless steel hinge pins and nylon bearings. Flush paddle handles are keyed alike on each truck.

Photo shows York's YU-77 layout for material and tools, with removable plastic tray inserts on material drawers carrying small hardware.



View of York Body & Equipment Co.'s Model YU-77 telephone installers' truck body.

Standard body equipment features neoprene door seals and seal retainers and B-77 rear bumper. Outside body dimensions are 84 inches long, 75 inches wide, 37½ inches high. Request NP-1637.

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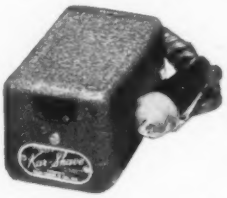
BATTERY CONVERTERS—The Terado Co. is offering two new transistorized converters, its "Continental" Model,



which has an output of 275 to 300 watts; and the "Supreme," which ranges from 175 to 200 watts.

The advantages of these converters are stated as time and labor savings for telephone construction and maintenance crews, especially where 110-volt, ac 60-cycle-operated tools, such as electric soldering irons, portable

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Chicago 5, Ill.

Please have the manufacturer send me without obligation the literature indicated by the following numbers:

NP1636_____; NP1637_____; NP1638_____; NP1639_____;
NP1640_____.

Name.....

Company.....

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6/3/61

drills, saws, etc. must be used on the line, but where ac power is not usually available; and where no engine-driven alternator is installed on a heavy construction truck.

Both Terado converters operate from a 12-volt storage battery. Their 60-cycle frequency is stable within ½ cycle, with varying input voltage and load.

The "Supreme" model is filtered to permit tape recorder operation. The heavy, copper-clad ventilated case measures 10¾ inches x 6 inches x 6 inches. Remote control is provided for both models. Request NP1638.

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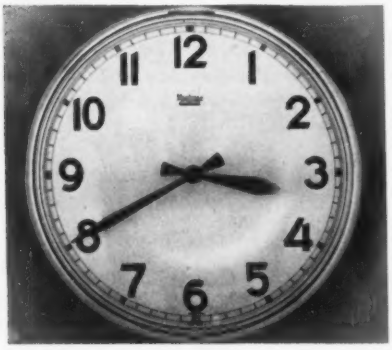
BATTERY-POWERED WALL CLOCK —A new battery-powered wall clock, suitable for office use, eliminates the



need for extensions or cords which dangle, Edmund Scientific Co. has announced.

Portable, the all-chrome instrument has a 12½-inch-diameter face and is reported to run accurately for up to three years on an inexpensive battery.

It can be mounted almost anywhere, because it is independent of outlets, sockets and electrical lines. Request NP-1639.

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DIAPHRAGM PUMP — The Edson Corp. has announced availability of its 1961 models of hand-operated diaphragm pumps, featuring Edson's "lever action."

The Edson self-priming diaphragm pump is reported to be able to handle virtually any material that will flow. It pumps liquids containing solids of any size or shape that can pass through the 2-inch suction and discharge connections. Neither soil, shavings, chips, stones nor any other solid matter can clog or jam this pump. It will carry industrial wastes, sewage, corrosive chemicals and any material which does not attack the rubber diaphragm or neoprene valves. The pump is said to be completely self-priming and has a

AREA CODE and ANC Dial Labels

PLACE YOUR NEW DIAL STICKER HERE
AREA CODE 000
000-0000
HERE IS YOUR NEW TELEPHONE NUMBER.
HOW TO INSTALL
1. Bend paper until round portion (below) is detached.
2. Gently peel off.
3. Place sticker over round number plate as above.
4. Press down firmly.
5. DO NOT MOISTEN STICKER.
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Self-sticking Dial Plate Stickers with Area Code, Area Code and ANC numbers, or complete number as illustrated. Furnished complete with instructions for subscriber installation. Easy to mail with monthly bill . . . for hand or automatic inserting into envelopes. Choice of self-sticking materials: paper, plastic or metallic. Phone for complete information or write:

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"Half Moon" Die-Cut Labels for Area Code Marking Above Existing Number Plate.

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115

The Galvanized Steel Strand with the built-in raincoat

Everybody talks about the weather . . . CF&I *does* something about it. To protect Galvanized Steel Strand against corrosion, CF&I builds in a zinc coating that shrugs off moisture. The result is a long-lasting, weather-resistant steel strand that is ideal for messenger wire applications.

Also highly suitable for guying assignments, CF&I Galvanized Steel Strand is made in seven- or three-wire constructions . . . in accordance with ASTM specification A-122. In addition, it can be tailor made to meet your particular specifications.

Like all CF&I products, Galvanized Steel Strand is made by a nation-wide company to meet high American standards. For immediate delivery, contact your nearby CF&I sales office.

THE COLORADO FUEL AND IRON CORPORATION
Denver • Oakland • New York
Sales offices in All Key Cities

suction lift to 25 feet. Its capacity is 1,800 gallons per hour.

One feature of the Edson "lever action" pump mentioned by the company is the fact it is a 100 per cent portable unit . . . thus reducing the need for permanently located transfer pumps or power units. As a portable, the Edson pump can be supplied on a handy carrying board, to quickly transport it anywhere for emergency use.

Another property of the Edson hand-operated pump is the large fluid capacity it is reported to handle . . . up to a gallon of liquid with each suction stroke of the handle. Due to its "lever action" design, one person can pump 30 gallons of liquid a minute for long periods without tiring.

The pump is manufactured in aluminum, bronze and stainless steel; weighing 10½, 29½ and 37 pounds respectively. The head ring can be rotated to locate the handle in any one of three operating positions. The handle is galvanized steel, 32 inches long and lifts out for storage.

This new 7½-inch x 10½-inch x 17-inch pump is furnished in two basic models, differing only in the positioning of the inlet; either on the side or in the bottom of the base mounting. Request NP1640.

Bell Uses Closed-Circuit TV; Tells Mich. Building Story

Something new in customer relations is being offered by the Houghton office of the Michigan Bell Telephone Co. in the form of a service to sidewalk superintendents. During this spring construction period, from 8 a.m. to 5 p.m., television cameras are trained on a Ripley, Mich. building site and the operations going on there.

A Houghton passerby gets to watch the "show" in this way: A cable carries the view of construction operations over to Hancock, and from there, via

the Portage Waterway, to a screen in the Houghton office.

At Houghton, in the hearty manner of Upper Peninsula citizens, William S. Ryan, Bell manager, invites all viewers, "Come in, have a seat, and watch your telephone building being erected."

If the idea catches on with the sidewalk superintendents, Mr. Ryan said, Michigan Bell's closed-circuit television for knot-hole watchers will be extended to other Michigan Bell construction projects.

IN THE NATION'S CAPITAL

Concluded from page 18

tunity to speak plainly what was on his mind and expect that it would be received in the constructive spirit intended. He did add, in a subsequent statement, that he had "no intent whatever of controlling any particular program" and to this extent his remarks had been widely misconstrued.

"I regret that my speech to the broadcasters has occupied so much attention," Chairman Minow told the House sub-committee. "I believe it has been seriously misinterpreted." Minow testified after Representatives Avery (R., Kan.) and Springer (R., Ill.) told the sub-committee that the FCC chairman's speech raised the threat of government censorship.

FCC Commissioners Hyde and Ford —the latter a former chairman of the commission—testified that the reorganization would give Minow too much power. FCC Member Bartley, a Democrat, agreed. But another commission member, John S. Cross, supported the

Answers to Questions On Page 34

(1) Customers will have access to DDD service, and will dial most of their own calls.

(2) All WATS calls handled by operators, whether from full-time or measured-time access lines, are to be ticketed.

(3) When you receive a call over a WATS trunk, answer with "operator."

(4) Yes. Also write "WATS" in the "spec. inst." space.

(5) If the operator receives a report of BY, DA, or OD, she will say, for example, "The line is busy. Will you try again later, please?" and cancel the ticket.

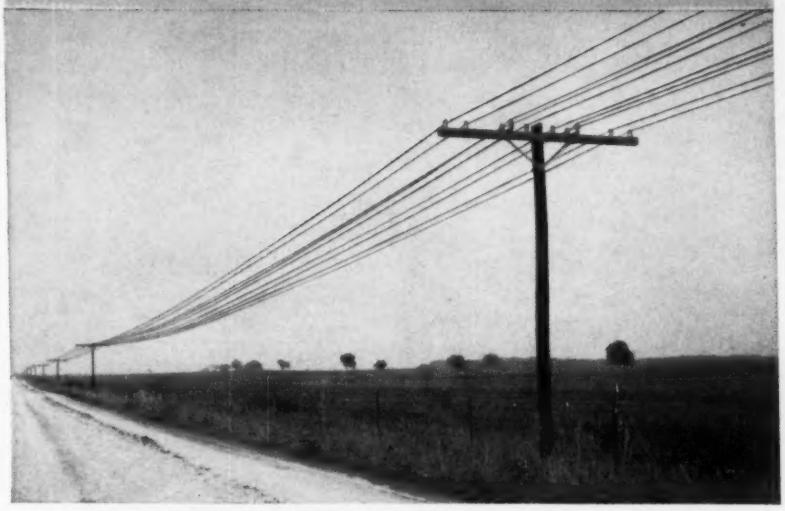
Crapo HTL-135

High Tensile Line Wire

MADE TO WITHSTAND HEAVY STORM LOADS

Time and time again, *Crapo* HTL-135 has demonstrated its ability to stand up under heavy ice and wind loads when other conductors failed. This can be attributed to the fact that *Crapo* HTL-135 combines high strength with high fatigue endurance plus superior elastic qualities which enable it to spring back into place when loads are removed. The result: service interruptions are minimized, re-sagging is seldom necessary, where this rugged telephone wire is used.

The excellent telephonic transmission characteristics of *Crapo* HTL-135 make practical subscriber loops of 14 to 15 miles with normal voltages and equipment. Longer loops are possible where higher voltages and more sensitive telephone sets are employed. For dependable, long-span, low cost rural lines, specify *Crapo* HTL-135.



HERE'S PROOF OF DEPENDABILITY

The Crapo HTL-135 in this typical rural line of 300-foot spans was subjected to two heavy ice storms within 14 months. This photo shows the line, without resagging, three months after the second storm.

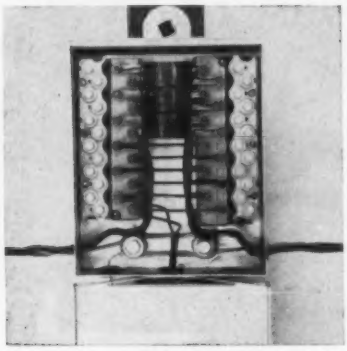
Write for Manual TM-59 containing complete engineering data!

Crapo HTL-135

INDIANA STEEL & WIRE CO., INC.
Muncie, Indiana

CEECO TYPE C177

TERMINAL LOADING CASE (PROTECTED OR NON PROTECTED)



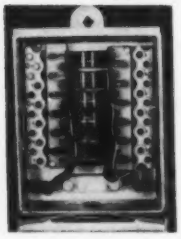
for 6, 11, 12, 16, 18 and 26 pair Rural Distribution wire or plastic cable.

Cast aluminum combination box for loading coils, capacitors and inductors. Designed to be used for rural distribution wire and plastic cable for 6, 11, 12, 16, 18 and 26 pair capacity and availble in 7 types to meet your requirements. Terminals are designed to accommodate Type C637 cases for coils, capacitors or inductors.

TYPE C637 CASE

Compression Coupling
required for plastic cable

Types 177A-177B

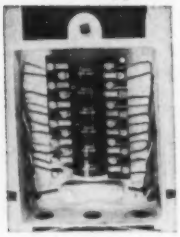


Two protected strips complete with C637 cases containing coils, capacitors or inductors

Type 177F

One protected strip — without C637 cases

Types 177C-177D



Two non protected strips complete with C637 cases containing coils, capacitors, or inductors

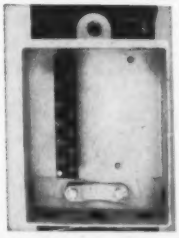
Type 177G

Two non protected strips — without C637 cases

Types 177E

Two protected strips without C637 cases

Type 177H



One non protected strip—without C637 case

Sold by all Telephone Equipment Suppliers
Write us for assistance on your loading and transmission problems.

COMMUNICATION EQUIPMENT & ENGINEERING COMPANY
5646 West Race Avenue • Chicago 44, Illinois
Phone EStebrook 8-3109

reorganization. "In my opinion, we have more due processes than any other agency," Cross said, "and we have just about reached the point where we have so much due process that we are too busy to work."

Ten Companies in Space Talk

Ten companies in the communications and related fields have started discussion on a possible joint development of a commercial communications satellite system. These include the major corporate combinations in radio, telephone, and telegraph. The announcement was made on May 24 by Communication Satellites, Inc., a new corporation established by the General Electric Co. "to act as a focal point for co-operative participation by private enterprise in a world-wide commercial communication satellite system."

Spokesman for the new group was D. T. Atkinson, its executive vice president, who said the other companies involved are the American Securities Corp., American Telephone & Telegraph Co., General Telephone & Electronics Corp., Hawaiian Telephone Co., International Telephone & Telegraph Corp., Lockheed Aircraft Corp., Press Wireless Corp., Press Wireless, Inc., Radio Corp. of America, and Western Union Telegraph Co.

RCA has been selected to build an experimental relay communications satellite for the government. The National Aeronautics and Space Administration, which selected the RCA plan, will negotiate a contract of about $3,250,000 for the building of the active repeater satellite. It is expected that the satellite, dubbed "Relay," will weigh 100 pounds and will be launched into an elliptical orbit ranging from 1,000 to 3,000 miles in mid-1962.

This has no connection with decisions about launching private communications satellites for industry. "Relay" simply comprises the federal program in this area. In addition, AT&T, General Telephone, General Electric Co., RCA, and other companies have proposed developing their own communication satellite projects.

The AT&T has a satellite under construction at Bell Telephone Laboratories, and is still negotiating with the National Aeronautics and Space Administration to launch it, if possible, in 1961 "if a rocket is made available."

The government's policy so far is to cooperate with industry in launching communications satellites. The NASA has offered to launch, for a fee equal to its own cost, private satellites that it considers technically promising. In practice, the space agency has been cautious in dealing with proposals.

Schultz Named in Okla. to Bell-Independent Liaison Post

Arval A. Schultz has been named Independent company relations manager in Oklahoma for Southwestern Bell Telephone Co.

A. A. SCHULTZ

He succeeds Sam C. Rich who has retired after 44 years of service with the company.

Mr. Schultz joined Southwestern Bell's accounting department at Kansas City in 1936 and transferred to the plant department in St. Louis the following year. He later worked in the engineering department at Dallas and St. Louis. He has been Independent company cost study engineer in St. Louis since 1955.

S. C. RICH

Mr. Rich has been Independent company relations manager in Oklahoma since 1946. He began his telephone career with Southwestern Bell's plant department in Oklahoma City in 1917 and shortly after took military leave

CUT COSTS!

BUDELMAN PLC-DR

TWO-PARTY CARRIER

Now you can provide **private line** service OR **two-party** service with **selective ringing**—with only ONE subscriber carrier channel.

Using PLC-DR (Private Line Carrier-Divided Ringing) on any existing physical circuit (Private or Party Line), you can serve one or two new subscribers via the same wire line—**at minimum cost.**

Simply plug the tiny transistorized module into the carrier terminal for 2-party, selective-ring service... or remove the module to upgrade the circuit to private line service... on any line with up to 35 db attenuation. Does not interefere with existing physical voice circuit.

Increase the return on your investment dollar.

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Contact your Budelman distributor or write us today!

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NEW General Telephone Cleaner

After two years of hard work by our chemists, this product has been perfected. It will remove all stains from the new plastic telephones . . . does not affect the cases in any way . . . is non-caustic, non-corrosive and non-inflammable . . . will not injure hands using it . . . makes cases look like new.

An Ideal Pair

New General Telephone Cleaner coupled with Magnolia Glayzit Telephone Refinisher have been demonstrated in over 200 exchanges with the result: orders placed promptly. Care to place yours now?

Magnolia Glayzit

Telephone Refinisher

POLISHES

1. SPRAY IT ON . . . . 2. WIPE IT OFF . . . and presto: A hard glossy surface that lasts for months. America's finest spray wax.

Cleans, revitalizes, preserves the surface! Dustproof—polish can't come off on cloth when dusting. Only dust comes off! Restores cabinet-maker's finish to furniture! Adds years to life of any finished surface! Supreme for telephones.

MAGNOLIA CHEMICAL CO., INC.

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to serve with the U. S. Army Air Corps during World War I.

Following his return to the company in 1920, Mr. Rich was manager at Duncan, Okla., and district manager at Enid and Tulsa.

The Oklahoma Telephone Association has presented Mr. Rich with an "award of appreciation."

Mr. Schultz will also fill out Mr. Rich's term as treasurer of the Oklahoma association.

Book Review

"MATHEMATICAL HANDBOOK FOR SCIENTISTS AND ENGINEERS: Definitions, Theorems, and Formulas for Reference and Review," by Granino A. Korn, professor of Electrical Engineering, University of Arizona; and Theresa M. Korn, formerly engineer, Boeing Airplane Co., and Curtiss-Wright Corp.; 960 pages, 6x9, illustrated, 110 tables; $20.00.

This new professional reference is planned to provide helpful mathematical definitions, formulas, theorems, and methods for engineers, scientists, research workers, and others whose work involves the use of mathematics and its methodology.

Among the subjects covered in the Handbook are algebra, analytic geometry, calculus, vector analysis, integrals, Fourier analysis, Laplace transforms, differential equations, Boolean algebra, tensor analysis, probability theory, random processes, correlation functions, numerical computation, and finite-difference methods.

For specific applications, each of the book's 21 chapters is arranged to permit the rapid review of a complete mathematical subject. For a broad view of the entire field of mathematics, chapter introductions, notes, and cross-references inter-relate the various topics.

Another feature of the book is the connected outline of mathematical models which are essential to exact scientific methods. By the use of concise tables and boxed groups of related formulas, and omission of all proofs, a full-range of mathematical facts and data has been included in one volume. In addition, the Handbook's detailed index serves as a mathematical dictionary—and individual chapter references and bibliographies guide the reader to more advanced treatment in specific areas of interest.

A brief sampling from the topics covered in this 960-page mathematical reference guide includes: Curvilinear-coordinate systems, potential theory, convergence tests for series and integrals, tables of vector operators, theory and construction of mathematical models, boundary and eigenvalue problems, tables of conformal mappings, topological spaces, statistical inference, differential equations, higher transcendental functions, mensuration formulas, plane and spherical trigonometry and a group of carefully chosen numerical tables, as well as other subjects.

Both members of this husband-and-wife team have worked as engineers for a number of aircraft firms, and their experience includes a background as industrial consultants for analog computer systems and military operations research. Professor and Mrs. Korn are co-authors of the book "Electronic Analog Computers," and Professor Korn is also co-editor-in-chief of the forthcoming volume, the "Computer Handbook."

The "Mathematical Handbook for Scientists and Engineers" can be ordered from TELEPHONY.

Fraider, Bauman Managers For Bell in Ind., Ill.

Announcement of two executive appointments, both to become effective June 1, has been made by Illinois Bell Telephone Co.

Kenneth P. Fraider, general manager for the company's Indiana area operations, will become assistant vice president, reporting to L. N. Jones, general counsel.

Mr. Fraider's successor in the Indiana headquarters at Hammond will be John H. Bauman, division traffic manager for the company's downstate division at Springfield.

Graduated from the University of Chicago, Mr. Fraider began his telephone career at Springfield as a service engineer, and has served in numerous management positions in the sales, commercial and plant departments.

He was appointed in 1958 to his assignment in Indiana.

A University of Chicago alumnus, Mr. Bauman was an Army Air Corps bomber pilot during World War II.

He joined Illinois Bell in 1947 as a traffic assistant. Before going to Springfield in 1959, he held supervisory positions in both the traffic and plant departments in the Calumet region.

Change Dominates

"The world into which we were born is gone; we have little or no idea of the world into which our children may grow to maturity. It is this rate of change, even more than the change itself, that I see as the dominant fact of our time." — PRESIDENT JULIUS A. STRATTON *of the Massachusetts Institute of Technology.*

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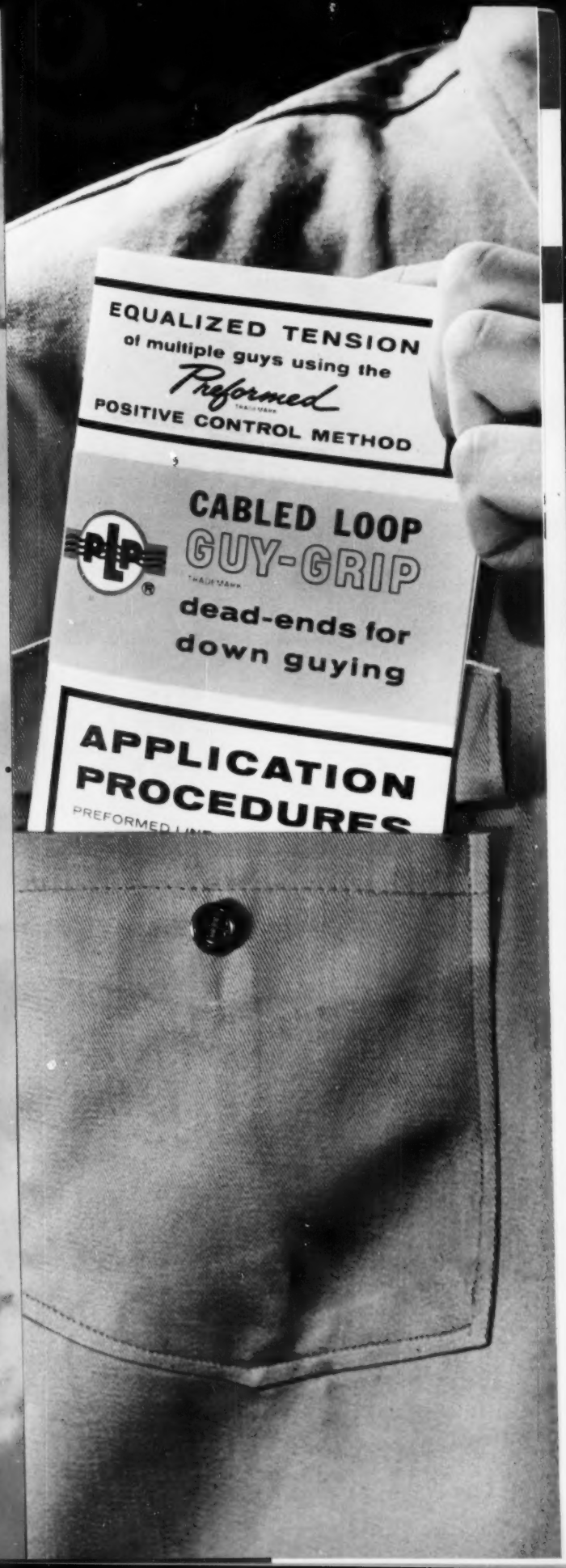
EQUALIZED TENSION

of multiple guys using the

Preformed
TRADEMARK

POSITIVE CONTROL METHOD.....

Write today for the new pocket-sized application booklet, or the file-sized brochure, covering *complete guying procedure* with the CABLED LOOP GUY-GRIP dead-ends.



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Write today for the new pocket-sized application booklet, or the file-sized brochure, covering *complete guying procedure* with the CABLED LOOP GUY-GRIP dead-ends.

Just follow these key s

① Tension the new guy until the existing guy goes slightly slack —then cut the strand about 3" above the rod eye, and align the loop of the GUY-GRIP dead-end and the rod eye.

② Wrap one leg of the GUY-GRIP dead-end onto the strand several turns (as far as the *second* cross-over mark).

③ Sim
leg
end
cros

EASIER with CABLED LOOP GUY-GRIP TRADEMARK dead-ends

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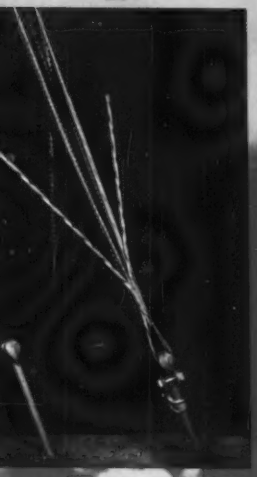
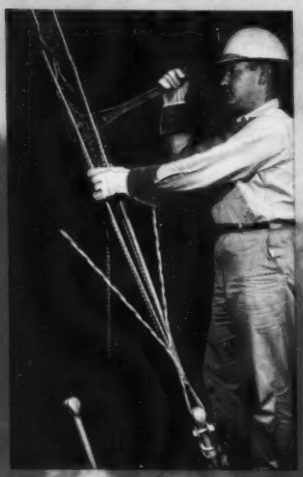
steps...

(shown here by a PREFORMED demonstrator)



Similarly wrap on the second leg of the GUY-GRIP dead-end as far as the second cross-over mark.



④ Back off the hoist until both guys are even. Complete the application of the GUY-GRIP dead-end to the strand. Repeat these steps for additional guys . . .

⑤ . . . and you're sure the tension is equalized.

CABLED LOOP GUY-GRIP

TRADEMARK

dead-ends

SAFEST, FASTEST, and MOST ECONOMICAL method of multiple or single guying

- Easiest for all joint pole construction.
- Compatible materials.
- Easier guying with *high strength strands* — no strand bending required.
- No concentrated stress on strand.
- Less pole rake required.

e product in this advertisement is manufactured under one or more of the owing: U.S. Patent No. 2,691,865 and 2,761,273; other patents pending.

Armour Foundation to Study Control of Radio Interference

A 2-million-dollar contract has been awarded, it was reported on May 10, to Armour Research Foundation (ARF) of Illinois Institute of Technology for technical support of a tri-service program to analyze and control radio interference in this country and abroad (TELEPHONY's Electronics Section, May 27).

In announcing the research program, Dr. Haldon A. Leedy, ARF director, said the center will function as the hub of the Defense Department's compatibility program. It will be operated in cooperation with the three military services.

ARF was awarded the contract by the Electronic Systems Division, Hanscom Field, Mass., of the Air Force Systems Command. Dr. Leedy said a temporary center will be set up at ARF, where electronic and mathematics specialists will develop methods for processing and analyzing radio interference problems. Later, the center will be operated by ARF at a permanent facility located at the U. S. Naval Engineering Experiment Station, Annapolis, Md.

The permanent facility will include a large digital computer for data processing. Dr. Leedy explained that radio interference has seriously reduced the efficiency of some of today's sensitive, high-powered electronic equipment, and as a result, could affect the future missions of the Armed Forces.

The center, officially designated as "The Electromagnetic Compatibility Analysis Facility," will have two important research goals: to correct existing radio interference problems, and to provide guide lines for improved equipment design.

Radio interference can affect missile launchings, satellite tracking systems, aircraft command links, military operations, and warning systems. Technical director of the center will be Stanley J. Cohn, ARF assistant director of electronics research.

Rugged Individual

It seems a young man lived with his parents in a public housing development. He attended public schools, rode the free school bus, and participated in the free lunch program. He entered the Army and upon discharge kept his national life insurance. He then enrolled in the state university, working part time in the state capital to supplement his GI check.

Upon graduation, he married a public health nurse and bought a farm with an FHA loan, and then obtained a Small Business Administration loan to go into business.

A baby was born in the county hospital. He bought a ranch with the aid of a GI loan and obtained emergency feed from the government.

Later he put part of his land in the soil bank, and the payments helped pay off his debt. His parents lived comfortably on the ranch with their social security and old-age assistance checks. REA lines supplied electricity.

The government helped clear the land. The county agent showed him how to terrace it. Then the government paid part of the cost of a pond and stocked it with fish. The government guaranteed him a sale for his farm products.

Books from the public library were delivered to his door. He banked money which a government agency insured. His children grew up, entered public school, ate free lunches, rode free buses, played in public parks and swam in the public pools.

The man owned an automobile, which he enjoyed riding on federal aid highway program highways. His farming business used great amounts of second and third class government subsidized mail.

He signed a petition seeking federal assistance in developing an industrial project to help the economy of his area. He was a leader in obtaining a new federal building and a new post office for his city, and went to Washington with a group to ask Congress to build a great dam costing millions so that his area could get cheap electricity.

Then, one day, at election time, he wrote to his congressman:

"I wish to protest excessive government spending and high taxes. I believe in rugged individualism. I think people should stand on their own two feet without expecting government handouts. I am opposed to all socialistic trends, and I demand a return to the principles of our Constitution."—Reprinted from *Rotary* Magazine.

Italy, Australia, Mexico Report Progress in Communications

The board of directors of Italy's Postal Ministry has approved a five-year plan to enlarge and modernize the country's long distance telephone network.

Estimated to cost 145 million dollars, the program will include the enlargement of all transmitting and commutating stations to improve service, and the more widespread use of long distance dialing.

The plan is divided into three phases as follows: 1961-1963, 1963-65 and 1965-67.

In the first phase, the existing 9,000 circuits are to be expanded to nearly 15,000; and concurrently, long distance dialing (presently functioning only between Turin and Milan) is to be installed between the following cities: Turin-Rome; Turin-Genoa; Milan-Genoa; Milan-Rome; Milan-Naples; Milan-Bologna; Genoa-Rome; Rome-Ancona; Rome-Pescara; Rome-Naples; Rome-Palermo; Rome-Cagliari and Palermo-Catania.

During the final period, efforts would be made to further expand the numbers of circuits, which would then total 26,000.

•

In Australia, Postmaster-General Charles W. Davidson has announced that in the fiscal year ended June 30, 1960, 167,141 new telephones were installed, bringing to 1,561,986 the total telephones in use throughout Australia.

In this same period, local and long distance calls handled numbered 1,612,000,000.

•

The Mexican government reports that about 20,000 new telephones are scheduled for installation in Mexico City during 1961.

Increase in White House Calls

Calls handled at the White House have increased more than 40 per cent since the last administration, estimated figures showed on May 22. They now run about 10,000 daily, the Associated Press reports.

Rabble-rouser's Reward

"Those who give the first shock to a state are naturally the first to be overwhelmed in its ruin. The fruits of public commotion are seldom enjoyed by the man who was the first to set it a going; he only troubles the water for another's net."—MONTAIGNE.

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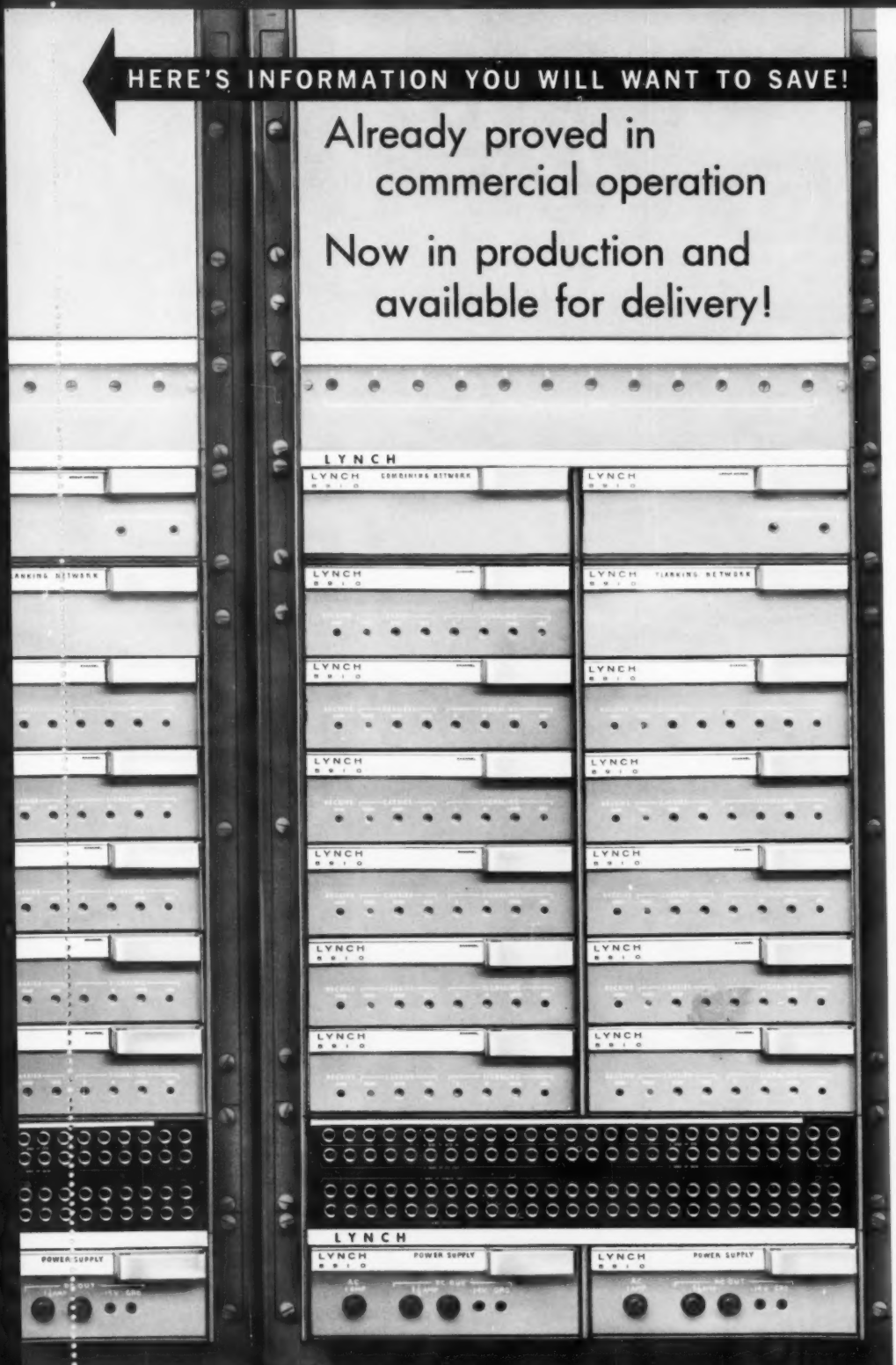
HERE'S INFORMATION YOU WILL WANT TO SAVE!

Already proved in commercial operation

Now in production and available for delivery!



SOLID STATE MULTIPLEXING SYSTEM

Low-cost dependability in today's most versatile microwave communications system!

Economical initial purchase of 1 to 12 channels, easy expansion to 600 channels.

Lower initial, expansion and maintenance costs.

Greater flexibility, with elimination of the need for common equipment.

Filter options for easy drop and reinsert configurations.

New level of reliability . . . up to 120 channels with no equipment common to more than 12 channels, except for the power supply.

All this—and it's available TODAY.

Turn the page for full details

B910 SOLID STATE MULTIPLEXING SYSTEM

Lynch

LOW-COST DEPENDABILITY

The Lynch B910 is a fully transistorized system offering exceptional operating flexibility and economy for microwave multiplexing applications, and it is also expandable to cable and wire-line operations on a carrier frequency basis to complete a communications system. Spectrum utilization conforms to CCITT recommendations. Lynch also has available an alternate modulation plan to facilitate economical and simple "breakout" of groups of 12 or less voice channels at any repeater or junction station along the line. System arrangements are available which will connect into Western Electric or other carriers of a similar type operating within a corresponding frequency range.

The Lynch B910 system does not penalize the small user . . . it is economically practical for small and large users alike.

The individual channels, occupying a four kilocycle segment, utilize single-sideband suppressed carrier transmission for maximum utilization of the microwave baseband and are individually stackable to the group maximum of 12 channels. Beyond the basic group of 12 channels, the system may be expanded progressively by group modulation methods, to 600 or more channels. It is not necessary to add groups in ascending frequency order, but they may be added at the frequencies required by the microwave system channeling plan according to the individual application.

Each channel of the B910 is completely self-contained in one horizontal drawer, with the exception of the power supply, terminating set and jack field, and includes an individual crystal controlled oscillator for modulation purposes and an individual oscillator for signaling. E & M signaling is standard for all units with all standard telephone signaling arrangements (ringdown, loop, subscriber, etc.) available as optional applique panels. Automatic standby power supply is also available.

An entirely new B910 filter design allows the basic 12 channel system to be translated directly to the 60 to 108 kc spectrum in one modulation step offering a substantial savings in the cost of intermediate group equipment, extra wiring, assembly and testing. In addition, a unique way of deriving the first supergroup (60 to 300 kc) makes it possible to place 120 channels on the microwave baseband without the use of supergroup equipment. No active equipment (except power supply) then affects more than 12 channels.

The Lynch B910 was designed and built specifically for microwave multiplexing application to provide a maximum number of channels on a minimum cost-per-channel basis. Particular emphasis has been given to equipment design with regards to maximum reliability, coordination, operating flexibility and ease of maintenance.

the essential facts . . .

GENERAL

TRANSMISSION . Single-sideband, suppressed carrier.

CHANNELS . . . 1 to 600

CHANNEL SPACING . . . . 4 kcs

SIGNALING . . . E & M or no signaling, standard. All other standard signaling options available with converter panels. Standard 3825 cps on-off signaling. Channel failure indicated by permanent busy signal.

POWER . . . . . Battery or 117 VAC. Approx. 1.2 watts per channel terminal.

OPERATING TEMPERATURES . −20° C to +60° C (−4° F to +140° F)

NOISE (Maximum) . . . . Idle circuit 15 dba, loaded 30 dba.

RADIO BASEBAND CONNECTION

LEVELS . . . . . −30 dbm send and receive (approx.).

IMPEDANCE . . . 75 ohms balanced and unbalanced or other impedances optional.

VOICE FREQUENCY

FREQUENCY RESPONSE . . . . 300 to 3400 cps +1, −3 db.

IMPEDANCE . . . Four-wire, 600 ohms balanced. Two-wire, 600 or 900 ohms balanced with provisions for precision balanced network.

LEVELS . . . . . Four-wire, −16 dbm. in, +7 dbm out. Two-wire, 0 dbm send, receive +1 dbm maximum.

HARMONIC DISTORTION AT TEST TONE LEVEL 2% total maximum at 300 to 3400 cps.

LEVEL STABILITY ±1.5 db with seasonal line-ups.

Lynch

LYNCH COMMUNICATION SYSTEMS INC.

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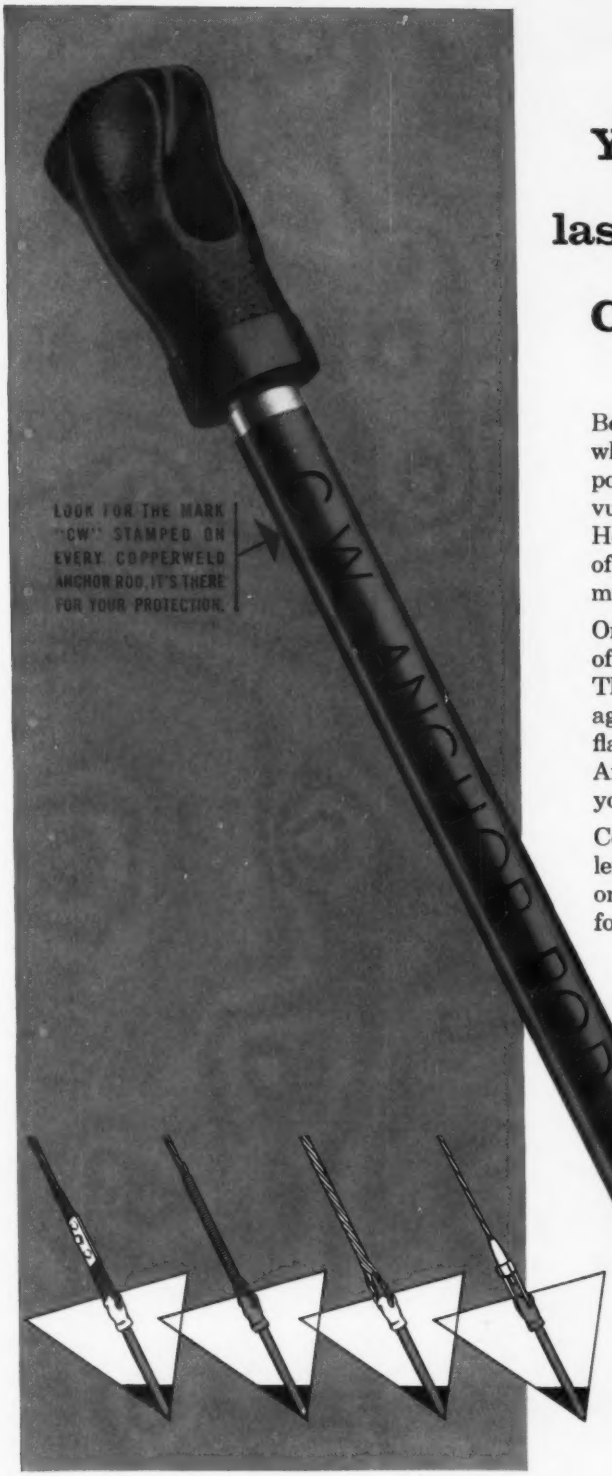


You get lasting security with Copperweld Anchor Rods

Because an anchor rod is used in the ground where its entire length cannot be seen, its holding power is often taken for granted. Yet, anchor rods are vulnerable—primarily at or just below the ground line. Here, the rods are subject to rusting and loss of strength due to the action of corrosive soils, moisture and air carried down by surface waters.

Only Copperweld Anchor Rods have a thick covering of copper molten-welded to a strong steel core. This method of manufacture assures lasting protection against corrosion. Since the copper cannot crack, flake or peel, the strong holding power of Copperweld Anchor Rods is always the same . . . protecting your overhead lines year in and year out.

Copperweld Anchor Rods are available in various lengths and diameters. For complete information on these non-rusting anchor rods, write for Engineering Bulletin E. D. 1883.

COPPERWELD STEEL COMPANY

WIRE AND CABLE DIVISION *Glassport, Pa.*

For Export: COPPERWELD STEEL INTERNATIONAL COMPANY, New York

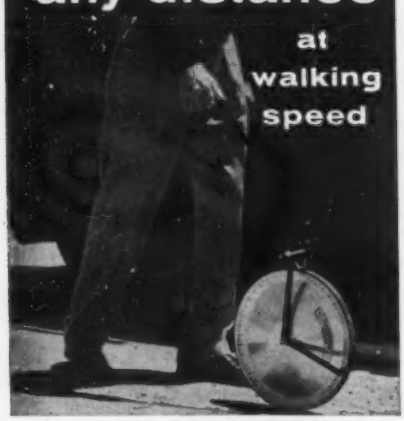
FERROUS OR NON-FERROUS FITTINGS CAN BE USED WITH COPPERWELD ANCHOR RODS.

The threaded ends of each Copperweld Anchor Rod are heavily coated with pure tin to permit the use of ferrous or non-ferrous fittings.

Copperweld®

anchor rods

Measure any distance at walking speed



records 100,000 ft. *automatically!*

It's So Easy to measure with a Rolatape ... and you save time on every estimating job... no tapes to wind, no helper is required. You get precision-accurate measurements every time.

Records Feet automatically and the accumulated total is always in full view.

Shows Inches, and Fractions of an inch. Wheel is calibrated in inches and fractions for quick easy reading.

Shows Tenths of a foot. Wheel is calibrated in tenths on reverse side for engineers.

There is a variety of Rolatape Models to suit your needs. See them at your local dealers.

Write for information and name of local dealer today!

Rolatape, Inc., 1741 14th St., Santa Monica 2, California

Rolatape

Measuring Wheels

J. T. Robertson New V.P. for Marketing, U.S.I. Corp.

The United States Instrument Corp. has announced the election of John T. Robertson to the position of vice president-marketing. According to USI president W. A. Rockwood, "The filling of this position lends additional strength in depth to our expanding efforts in the communication fields."

J. T. ROBERTSON

Mr. Robertson has had a long career in the telephone business in the U. S., Canada and abroad.

Before joining U. S. I., Mr. Robertson completed 14 years with International Telephone & Telegraph Co. in both that company's domestic and international divisions. He served most recently as marketing manager of ITT Kellogg in Chicago.

Prior to this assignment, he was general manager of ITT Electronics Service Co. in Montreal, Canada.

He has also been associated with Siemens Brothers, London, England, and Siemens Brothers (Canada) Ltd., both subsidiaries of Associated Electrical Industries.

Mr. Robertson is a former flying officer of the Royal Canadian Air Force, and during World War II, served with the bomber command of the Royal Air Force.

He was educated in Europe, and graduated as a communications engineer at London (England) University.

Parsons Names Two As Distributors—O., Md., Del.

Capitol Road Machinery Co., Columbus, has been appointed a distributor for the southern two-thirds of the state of Ohio by the Parsons Co., manufacturer of trenching machines.

Capitol will sell and service the Parson's line of ladder and wheel Trenchliners.

New "Lightweight" PULLS ANY SIZE POLE EASIER!

Simplex ALUMINUM POLE JACK A-1538

35 LBS. LIGHTER — WEIGHS ONLY 60 LBS.

The first time and labor saving improvement in pole jacking in 25 years! Aluminum housing saves 35 lbs. without sacrifice of strength or capacity. Pulls or straightens poles—pulls butts—moves loaded poles...without digging. Husky—to handle the toughest jobs. Same construction features as famous SIMPLEX No. 329 — the standard pole jack of the Bell Systems.

15-TON CAPACITY 22-IN. LIFT

Simplex LEVER · SCREW · HYDRAULIC Jacks

Write for Descriptive Bulletin

TEMPLETON, KENLY & COMPANY
2557 GARDNER ROAD BROADVIEW, ILLINOIS

Don't blindfold him!

THE AWESOME-looking instrument in the picture above is an electron microscope. Through it, a cancer researcher can observe the detail of a cancer cell—magnified 100,000 times.

The microscope costs $35,000 and was paid for by American Cancer Society funds—which support 1300 scientists, all working to find the cause of cancer, and its prevention.

Don't blindfold cancer research. Give to it. Send your contribution to CANCER, c/o your local post office.

AMERICAN CANCER SOCIETY

Capitol is located at 929 West Third Avenue. Paul A. Grummer is president and sales manager.

•

Parsons also announces the appointment of John C. Louis Co., Inc., Baltimore, as Trenchliner distributor for most of Maryland and Delaware, all of the District of Columbia, and parts of West Virginia and Virginia.

The John C. Louis company is located at 1805 Cherry Hill Road. George J. Schmidt is president, Lewis T. Phillips is executive vice president, and William B. Phillips is vice president.

Six Join Lenkurt Electric In Engineering Posts

Lenkurt Electric Co. has announced the following three appointments.

John F. McCormick has joined the company as an industrial engineer, assigned to the standards, estimating and industrial engineering department.

Hugh W. Kennedy is marketing applications engineer for Lenkurt Mobitel systems.

H. Vaughn Dickerson has been named applications engineer in the marketing standards department.

All three men will be located at the company's San Carlos, Cal. headquarters.

In more than a decade of industrial engineering experience, Mr. McCormick has served with such industrial firms as Johns-Manville Corp. and Colorado Fuel & Iron Co.

The Massachusetts-born engineer holds the AE and BBA degrees from Northeastern University in Boston. He is a member of the American Institute of Industrial Engineers.

Mr. Kennedy previously was with the Kellogg division of International Telephone & Telegraph Co. at Los Angeles. He has also been with the Allied Telephone Co., Little Rock, Ark. and with the Interstate Telegraph Co. of Bishop, Cal.

Mr. Dickerson formerly was with the Missiles & Space Division of Lockheed Aircraft. He also has been employed by Pacific Telephone & Telegraph Co. and Western Electric Co.

He has been assigned to Lenkurt's microwave radio products program.

Lenkurt has also announced the addition of three other engineers to the field sales and service organization. They are sales engineer Patrick T. Donahue and applications engineers Lee A. Hammond and Paul R. Laursen.

Messrs. Donahue and Laursen have been assigned to the central district office at 300 W. Washington St., Chicago, Ill.; Mr. Hammond will be with the eastern district office at 730 Third Avenue, New York City.

Mr. Donahue joined Lenkurt last year. He had been with Northwestern Bell Telephone Co. since 1953 in a variety of installation, maintenance and supervisory positions.

Mr. Hammond started with Lenkurt as a systems test technician in 1955. He became a field station maintenance supervisor in 1957, and rose to applications engineer in 1959.

Mr. Laursen, formerly with Pacific Telephone & Telegraph Co. in toll maintenance transmission work, joined Lenkurt in 1959 as an assistant applications engineer.

TR&S Anxious to Contact Friends of Leslie Mautner

Leslie Mautner, employe of Telephone Repair & Supply Co., recently became ill and could not return to work. As far as is known, Mr. Mautner has no relatives in the United States.

Therefore, Daniel H. McNulty, president and general manager of the com-

"KWAL-KRETE WATERPROOFS CINDERBLOCK BETTER, EASIER AND MORE ECONOMICALLY THAN ANY OTHER PRODUCT OF ITS KIND."

PERFORMANCE-proved is **KWAL-KRETE**, the paint developed especially to seal, protect and beautify cinderblock and concrete. The cinderblock buildings of a major western telephone company, painted 5 years ago with **KWAL-KRETE** are still bright and beautiful today. Isn't **KWAL-KRETE** worth YOUR consideration?

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Write today for FULL INFORMATION about KWAL-KRETE

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CHALLENGES ALL COMPARISON!

- DIGS WIDER - DEEPER - FASTER THAN ANY KNOWN COMPETITION
- COSTS LESS TO BUY - OPERATE - MAINTAIN
- SPEEDS UP TO 1200 FT. PER HOUR

GET THE FACTS and complete specifications on the Trench Devil from this specially prepared brochure.

- SELF PROPELLED
- POWER BOOM CONTROL
- REVERSIBLE DIRT CONVEYOR

OTHER MODELS

MA-2 - Self Propelled. Slightly less capacity than L-12

- JR Trencher Economy Model, hand winch propelled.

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GENERAL MACHINE PRODUCTS COMPANY, INC.
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pany, has asked that we publish this notice in the hope that someone in the telephone industry may know of friends Mr. Mautner had in this country, and who will have such persons contact Mr. McNulty.

Kahn, Phillips, Fitzgibbon Move Up in New AE Posts

Frederick L. Kahn has been named chief telephone engineer at Automatic Electric Co., Northlake, Ill.

F. L. KAHN

Mr. Kahn, director of the telephone switching systems development department, has been with the Northlake company since 1923.

In 1960, he was the recipient of Automatic Electric's highest honor, the

W. J. PHILLIPS

Talbot G. Martin Award, presented annually by the Strowger Automatic clubs, an employe organization, in recognition of his outstanding contribution to the art and science of communication.

SUPERIOR
Communication Wires and Cables

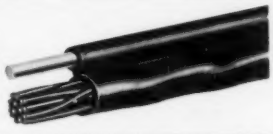
Quality engineered and manufactured, completely insulated and sheathed in modern plastics!

TEL-U
Fully color-coded to industry specifications. Longitudinal 8 mil aluminum shield, corrugated in all sizes, 6 to 400 prs. in 24, 22 and 19 gauge. To 600 prs. in 22, to 900 prs. in 24.

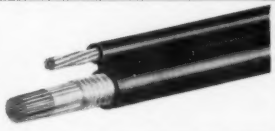
INSIDE WIRES & CABLES
Jacketed inside-outside wire. Duct wire (twisted). Flat web type. Jumper wire. Distributing frame wire. Ground wire.

TEL-CU
Fully color-coded. Longitudinal 5 mil copper shield, corrugated in all sizes 6 to 400 prs. 24, 22 and 19 gauge.

IM-RDW
Rural Distribution wire with integrated messenger of high strength galvanized steel. All weather core. Conductor insulation is high-density, black polyethylene with exclusive permanent inlaid color-coding stripe.



IM CABLE
Galvanized high-strength stranded steel messenger. Overall jacket of high molecular weight polyethylene. TEL-U or TEL-CU core construction in 18 to 100 prs., 24, 22, or 19 gauge.



"SUPER SPLICE"
Splice sleeve with one end sealed. Filled with insulating and waterproofing material. Use to keep splices waterproof. REA standard.

THREE-IN-ONE
A composite cable in which twisted pairs, triples and quads with special shields and individual jackets are cabled and collectively shielded and jacketed under one cover.

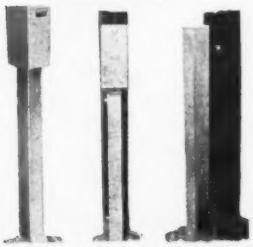
IM-119 RDW
One pair distribution wire to replace "C" Rural and for long drop wire extensions. Integrated messenger permits supporting wire only to be gripped by tangent support. Same construction as IM-RDW.

INTERCOM
Inside wiring cable, multiple conductor paired. Fully color-coded for intercommunication, inside telephone sound systems. Special vinyl jacket.

TS 222 TS 934
Tangent supports, designed for use with IM-RDW and IM Drop Wire products, are constructed of galvanized steel and hang on 7/16" diameter drive hook.

FOR OUTSIDE BURIED PLANTS

TERMINALS



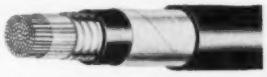
Pedestal or pole mounted buried plant terminals are available in a range of sizes for terminating or loading pairs of buried wires, and for accommodating cables from small through the large sizes for distribution or loading purposes; for splicing cables, and for termination of cable pairs.

SUBMARINE CABLE
Completely impervious to moisture and resistant to mechanical stresses in underground and underwater installations. Various constructions available, as well as single or double armor.

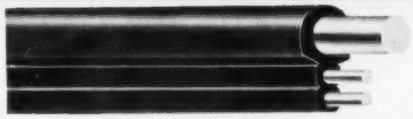
WIRES and CABLES

DB
Direct burial wire with high-strength flat steel armoring for maximum damage resistance from farm and road machinery, rodents and insects. Meets REA specifications.

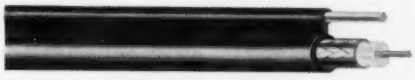
PCP
For direct burial installation using plow or trencher. Longitudinal copper shield. Double jacketed. REA specifications.



TEL-CS
For aerial, duct or direct burial installations. Two overlapping, spirally applied steel armoring tapes provide extra mechanical protection.



IM-DROP
Drop Wire IM-2-22 DW has integrated .062" messenger soft-drawn copper conductors insulated in parallel, flat web type construction with high grade polyvinyl chloride jacketing compound. Type IM 2-22 DWT has integrated .083" messenger and all-weather core of twisted conductors insulated with high density black polyethylene, color-coded with exclusive inlaid stripe.



IM-COAXIAL
IM Coaxial Cables are especially adaptable to applications requiring high, very high and ultra-high frequencies. Integrated messenger of high-strength, galvanized solid steel, conductor insulation and dielectric material is polyethylene.

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Sequential foot-marking available on many products.

For details, write

SUPERIOR CABLE

SUPERIOR CABLE CORPORATION • HICKORY, NORTH CAROLINA

Build lines to stay with

CHANCE ANCHORS

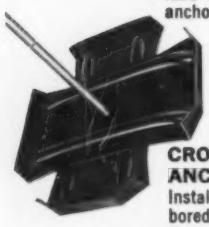
there's one for every need

8-WAY EXPANDING ANCHOR
Slips down a hole no bigger than the base plate. 8 rib reinforced blades expand into solid earth all the way around.

NO-WRENCH SCREW ANCHOR
Pitch-controlled blade goes down fast and adds to holding power. Can be installed by hand.

POWER INSTALLED SCREW ANCHOR
Lets you mechanize screw anchor installation with your power hole-digging equipment. Anchors install in 6 to 8 man minutes.

NEVER-CREEP ANCHOR
Pulls entirely against solid, undisturbed earth. Holds more load than any other type of anchor.



CROSS-PLATE ANCHOR
Install in vertical machine bored holes. Costs much less than "dead-man"--holds more.

ROCK & CONE ANCHORS
Wedge into solid rock and wedge against tamped rock.

CA61-8

A. B. CHANCE CO.
CENTRALIA, MISSOURI
A. B. Chance Company of Canada, Ltd., Toronto

Mr. Kahn has specialized in automatic switching, and holds a number of patents on telephone switching systems improvements.

A life-long student of telephony, he studied at the University of Frankfurt and the Institute of Technology in Berlin.

He began his association with Automatic Electric as an equipment engineer, and has held supervisory positions in systems analysis, equipment proposals, and cost studies.

Mr. Kahn's post as director, telephone switching systems development, will be taken over by William J. Phillips.

Mr. Phillips has since 1959 served as chief staff sales engineer for General Telephone System companies.

He began his career with Automatic Electric in 1937.

During World War II, his services were loaned to the U. S. Navy as supervisor of exchange installations in the Pacific, for which he received the Navy's Meritorious Civilian award.

Since his return to Automatic Electric in 1946, he has worked with installations in South America and in the U. S., in design engineering and staff sales engineering.

J. P. FITZGIBBON

Succeeding Mr. Phillips will be John P. Fitzgibbon, assistant to the superintendent of engineering.

Mr. Fitzgibbon joined Automatic Electric in 1936.

During World War II, he attended various telephone and carrier specialist schools. While serving in the China-Burma-India theatre, as a member of the Army Signal Corps, he participated in the construction of a 2,000-mile land communications system from Calcutta, India, to Kunming, China.

After returning to Automatic Electric in 1946, Mr. Fitzgibbon served in apparatus, carrier, transmission, equipment, and circuit engineering. In 1958, he became supervisor of circuit standards and adaptation.

TIC of Acton Names Barnes Sales Manager All Divisions

Malcolm H. Barnes has been appointed sales manager of all four divisions of the Technology Instrument Corp. of Acton, Mass.

M. H. BARNES

Mr. Barnes was formerly a senior field engineer with Yewell Associates, handling component and instrumentation sales for four years. Prior to that time, he was associated with the Gabriel Co. and with the Air Force Cambridge Research Center, in engineering and research.

Mr. Barnes is a graduate electrical engineer from the University of California.

In his sales manager's capacity at TIC of Acton, he will be responsible for sales of laboratory instruments, space instruments, mechanical products and environmental testing services.

General Directory Names Sales Training Supervisor

James Bardwell has been promoted to sales training supervisor for the Midwestern area of General Telephone Directory Co., Paul J. Gadbois, director of sales training, has announced.

Prior to his promotion Mr. Bardwell was sales supervisor of the Fresno, Cal. unit of the company's San Francisco Division. He launched his career in September 1957 as a sales trainee, completing the training program in January 1958 and advancing to sales representative.

In his new post, Mr. Bardwell will

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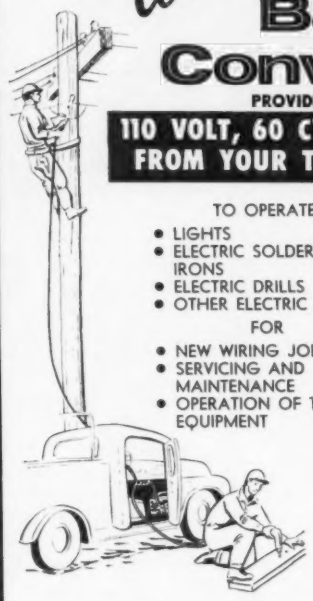
110 VOLT, 60 CYCLE A.C. POWER FROM YOUR TRUCK BATTERY



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- ELECTRIC SOLDERING IRONS
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- OTHER ELECTRIC TOOLS

FOR

- NEW WIRING JOBS
- SERVICING AND MAINTENANCE
- OPERATION OF TEST EQUIPMENT

"TRANSISTORIZED" THE CONTINENTAL 275 to 300 watts MODEL 50-193 USERS NET $116.34

THE SUPREME 175 to 250 watts MODEL 50-153 USERS NET $73.34

Both models have remote control

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Ask the man who uses one

HE'LL TELL YOU WHY RYCOM FREQUENCY SELECTIVE VOLTMETERS ARE BETTER!!!

2174A

SPECIFICATIONS					
MODEL	FREQUENCY RANGE	SELECTIVITY	LEVEL FULL SCALE	ACCURACY	TYPICAL FILTER SELECTIVITY
2171	60 Cycles to 4 Kilocycles	30 Cycle or 50 Cycle Filter	−68 to +32dbm	± .5db −80 to +32dbm 300 Cycles to 4 Kilocycles	**30 CYCLE FILTER** 6db— 35 Cycles 60db—250 Cycles
2174A	300 Cycles to 400 Kilocycles	50 Cycle or 100 Cycle Filter*	−68 to +32dbm	± .5db −80 to +32dbm 300 to 400 Kilocycles	**50 CYCLE FILTER**** 6db— 60 Cycles 60db—450 Cycles
SPURIOUS RESPONSE: Below 60db LOW INTERMODULATION: Below 60db POWER REQUIREMENTS: 115 V. A.C.—50/60 Cycles. WEIGHT: 28 lbs.					**100 CYCLE FILTER** (STANDARD) 6db—140 Cycles 60db—900 Cycles
* Including a wider filter and demodulator for monitoring SSB, AM and FM signals.					

This instrument utilizes the heterodyne principle with balanced modulation and highly selective crystal filters which achieve the high resolution needed for accurate amplitude measurements of Carrier and Microwave Sub Carrier channels. Direct reading in DBM for 135 and 600 ohm circuits or bridging. Offers fast accurate amplitude measurements throughout the frequency spectrum of 300 cycles to 400 kc. PRICE: $795 F.O.B. RAYTOWN, MISSOURI.

**50 cycle filter model priced slightly higher.

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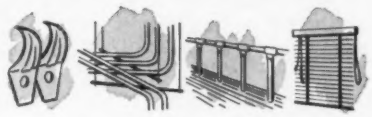

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...anchor them to masonry with

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UNIVERSAL ANCHORS, FOR FASTENING TO ALL KINDS OF MASONRY

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Please send a FREE copy of "Install it for Less" to

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1921–1961 Anchoring and Drilling Devices for Fastening Anything to Masonry

MIDWEC BUILDING-OUT CAPACITOR STUB TYPE A

Designed exclusively for the telephone industry—used and approved by leading telephone companies.

Potting Material—Filled Epoxy Resin
Cable Type—Standard Lead
Optional, Polythylene
Cable Conductor—22 Gauge
Over-all Length Cable—12' Standard or to Customer Specification
Capacitance Tolerance—±5% Standard, Other Tolerances Available on Request
All Capacitance Values Available to 4th Decimal, from .001 to .100.
Building-out capacitor stubs should be ordered on Supplies Requisition as follows: "MIDWEC Stub, Building-Out Capacitor, ____pairs equipped, ____feet of cable, ____mfd. capacitors, ____tolerance."

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TWO strategically located yards:
MINNEAPOLIS, MINNESOTA
FINDLAY, OHIO

R. G. HALEY & CO.
SPITZER BLDG. TOLEDO 4, OHIO

JAMES BARDWELL

work with sales personnel of the Bloomington, Ill.; Columbia, Mo.; Madison, Wis.; and San Angelo, Tex. Divisions. He will have his office at the company's Des Plaines, Ill., headquarters.

Mr. Bardwell had won five company awards for his excellent sales performance.

He is a native of Long Beach, Cal., and has served in the Marine Corps.

USI Motorswitch School Completes Spring Session

The United States Instrument Corp.'s Motorswitch School has completed its spring session.

Eight representatives of six companies attended this session which began on Apr. 17, and terminated on May 26.

All phases of Motorswitch central office maintenance were covered in detail during the six-week period. Emphasis was placed on Motorswitch assembly lines in the USI plant facilities. Study time was devoted to circuit symbols, Motorswitch adjustment, type 70 relay adjustment, and intercept equipment.

During his graduation dinner comments, USI instructor Howard F. Conroy announced that "this has been, perhaps, the most successful Motorswitch School to date. This has been due not necessarily to anything we at USI have accomplished, but more to the advanced, highly progressive training and thinking of the individuals present and their respective companies."

Package Mobile Exchange Shipped by Sea to Alaska

The largest package mobile dial telephone exchange ever to be shipped by sea in North American Pacific waters left Seattle, Wash., on May 19 aboard Alaska Steamships' motor vessel "Galena" on a 1,000-mile voyage to Haines, Alaska.

The 9-ton system will be installed by Alaska Telephone Corp., a subsidiary of General Telephone & Electronics Corp., to replace a smaller, outmoded system at Haines.

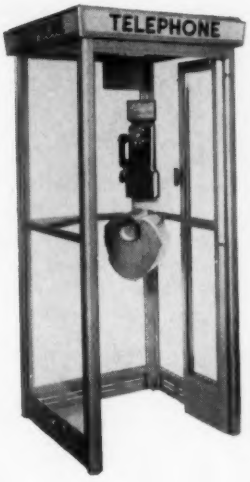
Alaska Telephone Corp., which was acquired by the General System in October, 1959, also operates exchanges in Petersburg, Seward, Wrangell and at Moose Pass on the Kenai Peninsula.

C. J. McLean, vice president and general manager, said another package installation is planned for Metlakatla on Annette Island if present negotiations are successful.

The Haines installation, which is

Students at United States Instrument Corp.'s Motorswitch School observe a portion of the Motorswitch assembly area. Standing, left to right are: Russell Clubb, United Telephone Co. of Mo.; Lewis McClain, Telephone Utilities of W. Va.; Oley Fox, USI; Ralph Stevens, Winter Park (Fla.) Telephone Co.; Lloyd Brown, United Telephone Co. of Kan.; Phil Cotton and Stanley Haines, both of United Telephone Co. of Pa., and William Veable, Telephone Utilities of W. Va.

PROVED **BEST** for ease of maintenance



A combination of glass, enamel, anodized aluminum and simplicity of design keep maintenance problems to an absolute minimum.

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Benner-Nawman, Inc., 3421 Hollis Street, Oakland 8, California.

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Simplify your research and design problems—with

CIRCUIT THEORY and DESIGN

By John L. Stewart, *California Institute of Technology*. Stressing modern, powerful pole-zero design methods, this book applies modern network theory to the understanding of vacuum tubes and feedback systems.

The author avoids use of abstract mathematics, yet gives data and design procedures of practical significance, discussing a wide variety of specific devices. The pole-zero design methods, given in easy-to-use form, show development of design for a large variety of circuits with and without vacuum tubes, and for systems with and without feedback. This book is a *must* for anyone interested in design and research in linear systems. **1956. 480 pages. 463 illus. $9.50.**

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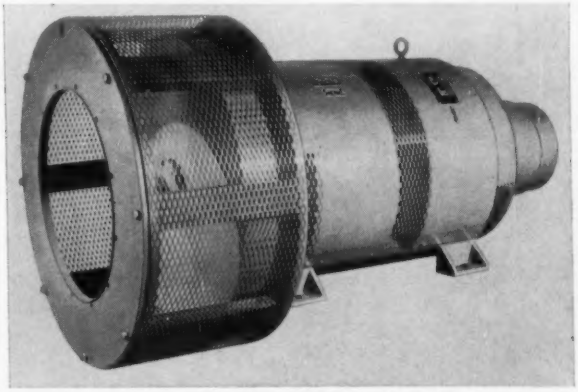

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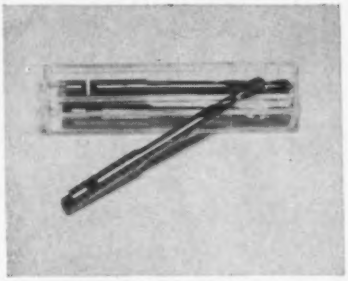

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permanently housed in a specially designed trailer van of the "mobile home" type, was assembled in the plant of Proctor & Associates at Bellevue, near Seattle. The new mobile system is of the all-relay type, manufactured by Leich Electric Co., also a subsidiary of GT&E. Equipped initially for 240 lines, the compact telephone exchange can be expanded to nearly double that capacity.

It was scheduled to arrive at Haines on May 26, with cut-over of telephones from the old to the new system slated for June 11.

New outside distribution cables will be connected as soon as the mobile package exchange has been towed into place. Engineering and installation of the outside plant facilities have been carried out under the supervision of Richard Belt of General Telephone Co. of the Northwest from Wenatchee, Wash.

In announcing departure of the mobile exchange, Mr. McLean said that Ira Powell, Haines businessman, will continue to act as agent for Alaska Telephone Corp. at Haines.

The new dial system will provide individual-line service and fully harmonic ringing on party lines. ANC—All Number Calling—will be introduced at the same time, in line with the practice being adopted by other telephone systems in North America. All Haines telephone numbers will begin with 766, followed by four other digits.

Long distance service will be provided through the Alaska Communications System's switchboard at Juneau, approximately 100 miles to the south.

In the event of commercial power failure, an emergency unit installed in the mobile exchange will automatically take over. In winter, generator heat, which is normally piped to the outside, will be reversed into the van to assure proper temperature conditions for operation of the switching equipment.

Cabling within the van is in ducts under the floor, an arrangement that provides uncluttered working space since there are none of the usual overhead cable runways.

E. E. McClaran Joins Telsta As V.P., General Manager

Edward E. McClaran has recently joined the Telsta Corp. of Redwood City, Cal., as vice president and general manager, according to Jay M. Eitel, president. Mr. McClaran has had more than 20 years' experience in administration and management.

Prior to joining Telsta, he was with

E. E. McCLARAN

Eitel-McCullough, Inc. for over 10 years, where he was vice president, finance, and also served as secretary and a director of the company. During this period, he was active in both the Electronic Industry Association and Western Electronic Manufacturers Association activities.

Previously, Mr. McClaran had been with Matson-United Properties, Inc., a subsidiary of Matson Navigation Co., as secretary-treasurer.

He received his A.B. degree in economics from Stanford University; holds a CPA certificate; and is a member of the American Institute of Certified Public Accountants; and of the California Society of Certified Public Accountants.

New Radio-Telephone Links Span Distance in Asia

Radio-telephone, in at least three recent instances, has opened up new Asian communication channels. India's director-general of over-seas communications service has announced that radio-telephone is now available from India to Debai, in Oman, via Bahrain. (Bahrain is a small island in the Persian Gulf on the Arabian side).

India and Afghanistan are now linked in the same manner; and the event was celebrated by an exchange of greetings between Dr. P. Subbarayan, Indian Minister for Transport and Communications, and Mohammed Murid, the Afghan Minister for Communications.

Also, what was planned as a temporary direct radio-telephone link between Karachi, Pakistan, and Rangoon, Burma, during the visit of President Ayub Khan to Burma, is now available on a permanent basis for public trunk calls.

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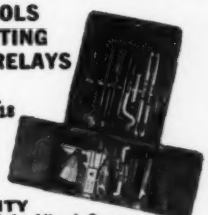

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Utility Service Co., Inc.	—
Utility Tool & Body Co.	—
Vermeer Manufacturing Co.	—
Warren Mfg. Co., The	16
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Williams Inspection Co., Inc., A. W.	65
Willys Motors, Inc.	—
Wilson Plastics, Inc.	67
Winders & Geist, Inc.	—
Wiremold Co., The	—
Wyoming Valley Equipment Div.	—

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McDONALD-THOMPSON

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2727 Oak Lawn Ave., Dallas 19, Tex.
2035 S. W. 58th Ave., Portland 1, Ore.

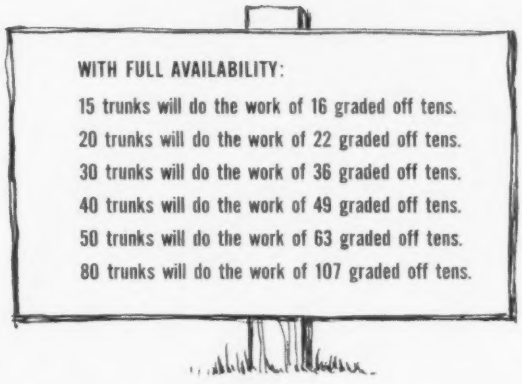
IS HIGHER TRUNK AVAILABILITY IMPORTANT?

Obviously, trunk availability is a determining factor in traffic capacity.

Conversely, if a smaller number of trunks can handle an equivalent amount of traffic, the savings in dollars and cents is considerable.

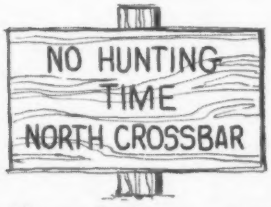
North Electric Crossbar switching equipment is handling more traffic over fewer trunks for many Operating Companies right now—and can do the same for you.

For example, in one instance*, North Electric Crossbar is handling the same volume of traffic over 60 trunks as was formerly handled over 90... and of course, there is no "hunting time" problem.


WITH FULL AVAILABILITY:
15 trunks will do the work of 16 graded off tens.
20 trunks will do the work of 22 graded off tens.
30 trunks will do the work of 36 graded off tens.
40 trunks will do the work of 49 graded off tens.
50 trunks will do the work of 63 graded off tens.
80 trunks will do the work of 107 graded off tens.

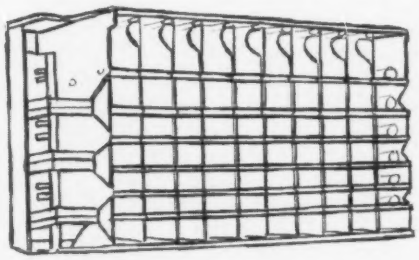
Since North Electric Crossbar is not limited to trunk availability by grading by tens, it becomes immediately obvious that this can be advantageous for you in:

- **Greater trunk availability**
- **Greater traffic capacity over existing trunks**
- **A substantial savings in cost of adding unnecessary trunking facilities**



These advantages are real and are significant, not only in light of your service today, but even more so in relationship to the demands that will be put upon your service in the immediate future.

If you believe, as we do, that there can be no compromise with efficiency of service in the telephone industry—then you need North Electric Crossbar—the most advanced switching equipment available to the Independent Telephone Industry from...



*Specific details on request

THE DYNAMIC FORCE IN THE TELEPHONE INDUSTRY

NORTH ELECTRIC COMPANY

GALION, OHIO

NORTH

No. 5 in a series of factual presentations on North Electric Crossbar.

Let our "Revenue Men"
TURN YOUR DIRECTORY PROBLEMS INTO PROFITS

Take a man like
Harold Verucchi

Harold is one of our "Revenue Men" in Princeton, Illinois.

He knows the territory well, and is well-known in the territory. In high school, Harold established a name for himself on the football field, the basketball court as well as the track cinders, and devoted his excess energy to the school paper, speech club and glee club.

After graduation, Harold started his business career as a wholesale routeman in dairy products. A short time later, he became a department manager in a chain store branch.

It was in 1953 that Harold joined General Telephone as a salesman in our Kewanee, Illinois, unit. He was promoted to Sales Supervisor of our Princeton unit in 1958.

Harold and his wife have two fine young children. You'll find Harold active in community groups like the Elks, the Princeton JC's, and his Men's Club at church.

Harold is typical of the "Revenue Men" who work for General Telephone Directory Company and for you. And they all have one thing in common—they are always an asset to any community in which they live.

Our Directory "Revenue Men" provide the Independent Telephone Industry with a flexible and highly skilled telephone directory organization. These men—working out of 35 strategic locations—are experienced specialists, trained to give you *complete* and *quality directory service.*

They act as telephone company representatives in their day-to-day contacts with your customers, not only selling and supervising the sale of Yellow Pages advertising—but also acting as public relations representatives for you in their dealings with the public.

Thoroughly trained to know any condition that pertains to telephone service, they're experienced hands at helping large and small Independent Telephone Companies "take the kinks out of knotty directory problems!"

Write or phone our office nearest you for our Complete Directory Service Plan.

GENERAL TELEPHONE DIRECTORY COMPANY

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